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**NEWS SUMMARY**

GENERAL BUSINESS

**Signs of order emerge in Iran**

The first signs have emerged that Ayatollah Khomeini, Iran's religious and political leader, is regaining control. Most of the country's workers have answered his call to return to work after several months of strikes.

But hopes are bleak of oil production returning to its previous level of 6m barrels per day. Khomeini has told oil workers to produce only enough oil for domestic needs—about 700,000 barrels a day. About 450 Britons were evacuated by the RAF to Cyprus over the weekend. Evacuation of the remaining 5,000 Americans also began under the protection of armed men provided by Khomeini. Back Page

**Howell pledges snow cash aid**

Snow Minister Denis Howell said the Government would pay 75 per cent of any spending above the product of a penny rate to help councils cope with the cost of the emergency. His promise came yesterday as the AA reported that dozens of main routes in the North, Midlands and East Anglia were still blocked. The west of England, however, appeared to have recovered from the bad weather. Forecast, Back Page

**Egypt hard line**

Egypt says it will make no more concessions to Israel in the peace talks to resume in the U.S. at Camp David on Wednesday. Egyptian Foreign Minister Moshe Darrar does not expect the talks to end in agreement permitting the signing of the proposed peace treaty. Back Page

**Shopfloor plan**

TUC General Secretary Len Murray held out the prospect of union conferences to involve the shop floor more closely in national disputes on pay and inflation. Back Page

**Metro stabbing**

A 19-year-old Welsh rugby fan, in France for the Wales-France international rugby match, was stabbed to death by teenagers in a Paris underground station.

**Fighter fund**

Saudi Arabia has agreed to pay \$25m to Egypt to buy 50 U.S. F-5 fighters which it was due to begin receiving last October.

**Bhutto fate**

President Zia-Ul-Haq, Pakistan's military ruler, said in a U.S. television interview that he would not decide for himself on the fate of former Premier Zulfikar Ali Bhutto, but would let the military and civilian leadership rule on any appeal.

**Robbery arrests**

A West German Luthansa employee and another man were arrested in New York in connection with a \$5.35m robbery from the airline's cargo terminal at Kennedy International Airport.

**Briefly**

Former UK Conservative MP Humphrey Berkeley plans to continue working for the Transkei Government in spite of the attack on him by members of the security police. The bodies of a woman and baby were found beside the River Stour at Dedham, Suffolk. More than 140 firemen braved collapsing walls and floors to fight a blaze which gutted Automotive Products' five-storey factory in Bolton. Winner of the weekly £75,000 Premium Bond prize is the West Midlands owner of Bond No. 15WK 009653. The £50,000 prize goes to the Nottingham owner of Bond No. 13VS 346631.

**Chinese halt push into Vietnam after Russian warning**

BY RICHARD NATIONS IN BANGKOK

China has stopped short of pushing deeper into Vietnam on the second day of her border crossing, and there are signs that some elements of the three-pronged invasion force may already be pulling back, military analysts here say.

These developments come as the Soviet Union issued a stern warning to Peking that it would honour its commitments under the Friendship Treaty with Vietnam, and Washington called on China to withdraw her troops. A flurry of diplomatic activity took place in centres as far apart as the United Nations in New York and Bangkok, to contain the conflict, which has profoundly worried leaders in South-East Asia. Herr Kurt Waldheim the UN Secretary-General called for a ceasefire last night.

The People's Daily, the Chinese Communist newspaper, suggested yesterday that objectives in Vietnam would be limited, and that Chinese forces would be withdrawn to their normal positions along the frontier with Vietnam as soon as their mission had been accomplished. Intelligence from the battlefield is still very sketchy, and some analysts do not rule out the possibility that Chinese units may be probing deeper into the interior. Faced with an overwhelmingly superior force, Hanoi appears so far to have avoided throwing its few remaining regular Army divisions in the north against

the details, but it was said that there were two main areas where the Chinese struck. Peking's military thrust follows its off-repeated promise to "punish" Vietnam, and crowns a year of bitter quarrelling that grew in pace with Vietnam's invasion of neighbouring Cambodia, China's only ally in the region. When Hanoi's armoured columns seized the Cambodian capital of Phnom Penh early last month with impunity,

**Scottish opinion poll puts Tories level with Labour**

BY RICHARD EVANS, LOBBY EDITOR

THE CONSERVATIVES are now running neck and neck with Labour in Scotland and well ahead of the Scottish National Party, according to an opinion poll published today. The implications of the poll, conducted by Opinion Research Centre for the Scotsman, could be considerable for the Government, not only in the General Election but in the devolution referendum on March 1. In previous surveys Labour has always maintained a clear lead. Ministers fear that the impressive increase in support for the Conservatives could mean that the Tories, as the major anti-devolution group, could play a more decisive wrecking role in the referendum than had been expected. And a No vote, or a clear failure to reach the required Yes target of 40 per cent of the electorate, would cast grave doubts on the Government's ability to survive at Westminster beyond the spring. Mr. Callaghan's main hope of

staying in power to the autumn, as he would probably like to do, soften the memories of the Tories to build on the agreement reached with the TUC and retain the support of the Nationalist parties. But there would be little reason to expect this if the prospect of Assemblies were to be dashed by the referendum results. The ORC survey shows that both Labour and Conservatives have the support of 38 per cent of the electorate, followed by the SNP with 19 and the Liberals with 5. In the October 1974 General Election Labour polled 38.3 per cent, SNP 30.4 per cent, Tories 24.7 per cent and the Liberals 8.3 per cent. The continuing slide in the SNP vote means that the Conservatives can expect to recapture four or five of the eight seats the Nationalists won from them in 1974 and there is now every prospect of the Tories capturing some Labour seats as well. It is essential for Labour

**Abandoned pit may re-open**

BY JOHN LLOYD

APPROVAL for investment of about £150m-£200m in an abandoned Yorkshire colliery is expected shortly. Thorne Colliery, in the National Coal Board's Doncaster area, was closed in the mid 1950s because of shaft, tunnelling and water difficulties. It is estimated that there are some 140m tonnes of workable reserves in the pit, and that it could quite rapidly be brought to an annual production of 2m tonnes of power-station coal.

An area NCB team has been working on development plans for the pit over the past year, and is convinced that it will be highly profitable. If approved, the investment will be the second largest undertaken by the NCB since the "Plan for Coal" of 1974 reversed the decline in the industry. The largest investment approved to date is that for the mining complex at Selby, also in Yorkshire, where estimates of the final cost now run at around £800m. It is thought that there would be jobs for around 1,500 men at Thorne. Some might be moved from other pits in the area if they are closed. While there are no collieries in the four Yorkshire NCB areas officially earmarked for

**Money broker seeks recognition**

BY JAMES BARTHOLOMEW

SARABEX, the controversial money broker which in 1977 complained to the European Community about the "closed shop" in London money broking, has applied to the Bank of England to become itself a recognised money broker. The six banks which have sponsored the application include Bank of America, the biggest bank in the world. Money brokers are middlemen between dealers—mostly banks—in currencies and deposits. In Britain they are not allowed to deal on their own behalf. Sarabex's application has put the Bank of England on the spot because it is applying under new rules for the regulation of money brokers which came into being in December last year as a result of complaints made by Sarabex itself. Sarabex, which is London-based with Middle East connections, explained to the European Commission in 1977 that London money broking was a "closed shop". New brokers could not deal in the main currencies without joining the Foreign Exchange and Currency Deposit Brokers' Association, it said. Sarabex maintained that this was against the Treaty of Rome. The Bank of England opposed Sarabex's case claiming that the brokers' association was under the Bank's wing and was therefore not in breach of the Treaty. But the EEC Commission agreed with Sarabex to the extent that it insisted indirect control was not enough. From December 15 last year the Bank itself took over the decisions on who to admit to the money-broking fraternity. The Bank is now processing Sarabex's application, calling for references from the six sponsoring banks. References on the individual employees have also been requested. The position is particularly delicate for the Bank because some influential members of the brokers' association are opposed to Sarabex's entry to the market. The Bank is bound to consult with the association before deciding whether or not to admit Sarabex. Another broker, Longmar, has also applied to become a "recognised money broker" under the new rules.

**Swiss reject stricter nuclear control**

By John Wicks in Zurich

THE MARCH of Europe's anti-nuclear lobby received a setback yesterday when Swiss voters firmly rejected a referendum proposal to impose stricter controls on nuclear power stations.

The proposal—which would have amended the Federal constitution and prevented further operation of existing power stations and the building of new ones without Parliamentary approval—was soundly defeated in a majority of Cantons in early results.

The Swiss Government had claimed that approval of the proposal would have made it virtually impossible to increase further the country's electricity production.

The proposal had been the subject of considerable public discussion. A "yes" vote would have meant that Switzerland's four existing nuclear power plants would have had to obtain subsequent parliamentary approval or cease operation.

**Encouragement**

The government had advised against acceptance of the motion—which had been supported by the Social Democratic Party a member of the governing coalition—as well as by the Independent Party and a number of smaller parties on the extreme Right and Left.

The vote in Switzerland will come as an encouragement to the world's nuclear industry following the decision by Austrian voters virtually to cease nuclear production, the slowing down of the Swedish Government's nuclear programme and significant opposition to the proliferation of nuclear power in West Germany.

Also rejected this weekend was a proposal to ban all advertising for tobacco and alcohol. This would have been an absolute ban, with the sole exception possibly of foreign publications "with an insignificant circulation in Switzerland". This would have led to the banning from sale of widely-read magazines and newspapers from abroad and might have proved a contravention of the Helsinki Agreement.

Continued on Back Page  
The devolution debate in Wales, Page 27

**Demand falls as more prices rise**

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

DEMAND IS weakening for products from much of British manufacturing industry, compared with last year. Cost pressures are increasing, resulting in more price rises.

Those are the main conclusions of the Confederation of British Industry's latest monthly trends inquiry, published this morning. It confirms the deterioration in confidence and conditions since last autumn reported by the more extensive quarterly survey at the end of last month. The latest inquiry, covering 2,049 respondents in manufacturing, was conducted during the first fortnight of February. It reflects attitudes immediately after the lorry drivers' strike.

The number of companies with more than adequate stocks of finished products has increased slightly. That may reflect the decision by many companies to continue producing during the strike although goods could not be distributed. The same pressures may not apply outside manufacturing. Retailers, not covered in the survey, have in some cases seen stocks run down. So an increase in demand for bank lending by some manufacturing companies might be partly offset elsewhere.

Overall, CBI leaders are worried about liquidity and profitability pressures. The disputes appear to have squeezed cash flow and increased costs because of inefficient production and distribution. The survey says: "The gradual improvement in demand, which occurred through most of last year, has been at least checked in the first two months of 1979."

**Lorry dispute**

"This pattern of demand is apparent throughout manufacturing industry, although producers of consumer goods continue to experience stronger demand than the intermediate and capital goods sectors; and smaller firms report stronger demand than the larger."

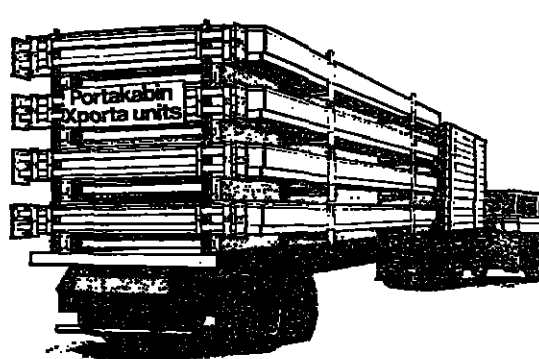
The pattern reflects the continued strength of the export markets for consumer goods, although the weakness of the intermediate sector is the result of long-standing difficulties in metal manufacturing and the severe impact of the lorry drivers' dispute on the chemicals industry. The expected volume of output has recovered somewhat compared with the worst period of last month's strikes although the balance of companies expecting a rising trend of production in the spring is still lower than in the last few months of 1978. The sharp increase, reported in January, in the proportion

of respondents expecting rising average domestic prices, has been maintained this month. However, the extent of the possible acceleration in price inflation should not be exaggerated, since the proportion of companies in the survey expecting higher prices remains significantly lower than three or four years ago. That accords with the view of many economists that, in spite of labour cost pressures and present higher food prices caused by the weather and the road haulage dispute, the 12-month rate of retail price inflation should at worst not increase much above 10 to 13 per cent this year, compared with 9.3 per cent at present.

**Oil prices**

In a BBC radio interview yesterday, Mr. Denis Healey, Chancellor, said he believed that the rate of price inflation could be kept in single figures if everyone kept their heads about pay. That took account of the increase announced in oil prices. Mr. Healey repeated his commitment to the official borrowing and monetary targets set out in last month's spending White Paper. Immediate monetary worries have been eased by the authorities' success in selling about £1bn of gilt-edged stock in the 10 days since the 11-point increase in Minimum Lending Rate. However, purchases of stock by financial institutions have been financed by a reduction in interest-bearing deposits and that has put pressure on the banks' squeezed reserve assets. That pressure has been reflected in a rise in overnight and seven-day interest rates in the money markets, in contrast with the decline in three-month rates shown by the Treasury bill tender on Friday. Consequently the Bank of England has responded with the announcement last Thursday that £742m of special deposits held with it by the banking system were temporarily to be released from today. That is intended as a technical smoothing operation and should carry the banks over the make-up day for the February banking month on Wednesday. The hope is that their reserve asset ratios will stay above the minimum. The release is designed to avoid unnecessary fluctuations in the short-term interest rates, although without easing the constraint that the corset control on the banks' deposits will continue to impose on the trend in bank lending.

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OVERSEAS NEWS

Danes to seek EEC fish action over UK

By William Dullforce in Stockholm
DENMARK'S Fisheries Minister, Mr. Svend Jakobsen, goes to the EEC Fisheries Ministers meeting in Brussels today with no expectation of settling Denmark's dispute with Britain over the Norway pout box. But he hopes that the EEC Commission can be stiffened into implementing its threat to haul Britain before the European Court of Justice.

U.S. cautions Moscow over Vietnam conflict

BY JUREK MARTIN, U.S. EDITOR, IN WASHINGTON

THE U.S. has publicly and privately been warning China, Vietnam and the Soviet Union not to permit the Chinese-Vietnam border conflict to widen into a regional war, with possible serious consequences for international stability.

The Administration's main hope is that China plans no permanent occupation of Vietnam, but intends primarily to punish Hanoi for its recent victory over the Chinese-sponsored Government in Cambodia.

Kabul of the U.S. Ambassador to Afghanistan. In his public statements over the weekend, the Administration has been most careful not to appear to take sides.

normalisation of relations with China may be harmed by this outbreak in hostilities. An official pointed out over the weekend that normalisation was "an accomplished fact and will not be reversed."

KILLING OF US ENVOY IN KABUL

Head of Afghan security denies Soviet involvement

BY DAVID HOUSEGO IN KABUL

The head of Afghanistan's security forces Commandant General Daoud Taroon denied in an interview here that Russian advisers were present at the hotel where U.S. ambassador Adolph Dubs was held hostage by terrorists last week before being killed.

Housing starts decline by 20%

BY STEWART FLEMING IN NEW YORK

SIGNS of the long-awaited slowdown in the U.S. housing industry are apparent in the latest figures for the industry which the Commerce Department has released.

Through most of 1978 housing starts ran at an annual rate of 2m, a level established early in 1977. In both 1977 and 1978, however, the annual rates in January were well below average at 1.3m units (1977) and 1.5m units (1978).

UN fails in bid to send troops to south Lebanon

BY IHSAN HIJAZI IN BEIRUT

ISRAEL has blocked moves by the United Nations to deploy peace-keeping forces in the border area in southern Lebanon. The Israeli stance was conveyed at talks in Jerusalem two days ago with UN officials.

militiamen, and for deploying units on the Lebanese army alongside UN outposts. Government officials were quoted in the Press here yesterday as saying that without firm guarantees, Lebanese troops will not be sent to the south.

Advertisement for ECGD (Export Credits Guarantee Department) featuring a large image of a man in a suit and glasses. Text includes: "When you first realize you can sell overseas, somehow it gives you a new sense of freedom and independence. Suddenly you've got the whole world to go at. You know what I mean?"

Tough new measures against hostage-taking

BY BRJ KHINDARIA IN GENEVA

KIDNAPPINGS such as those of industrialists Hans Martin Schleyer, and Baron Empain will become more hazardous for terrorists or just plain criminals because of a new international treaty against the taking of hostages.

Tanzania and Uganda agree to peace talks

NAIROBI

Uganda and Tanzania will discuss ways of ending their border war in Nairobi on Wednesday at a meeting arranged by the Organisation of African Unity, officials of the organisation said yesterday.

Light polling as Bangladesh chooses its MPs

DACCA

Voting was light in Dhaka yesterday as Bangladesh went to the polls to elect its second Parliament since independence in 1971. The 300-member Parliament will be the first under the rule of President Zia-ur Rahman, who came to power three-and-a-half years ago.

Rhodesian raid 'routine'

BY TONY HAWKINS IN SALISBURY

RHODESIAN officials denied last night that Saturday's airstrike against guerrilla bases near Livingstone, close to the Zambian border with Rhodesia, was in retaliation for last week's shooting down of an Air Rhodesia airliner at Kariba.

EGGD advertisement text: "EGGD insures from date of contract or date of goods. Cover is available for contracts in sterling or other approved currencies for: Continuous sales worldwide of raw and processed materials, consumer goods and production-line engineering goods." Includes EGGD logo and contact information.



# U.S. textile industry backs Carter's Geneva package

BY DAVID BUCHAN IN WASHINGTON

AMERICAN textile companies and unions have agreed to put their weight behind the trade package negotiated by the Carter Administration in the Geneva multilateral talks. This is in return for a programme of export promotion and productivity incentives and of curbs on future import surges, which was announced by the White House at the end of last week.

The bargain thus struck, saves the final stages of the Geneva negotiations from collapse in two important respects. It removes the threat that the textile lobby on Capitol Hill, at the eleventh hour, might again try to bar the Carter Administration from making any concessions to foreign countries in Geneva on U.S. textile tariffs. President Carter last autumn vetoed an attempt by Congress,

spearheaded by representatives from the big-spinning states of North and South Carolina, to do just this. Other countries, notably the European Community, had warned flatly that U.S. failure to bargain on its textile tariffs would jeopardise the Geneva talks.

Equally vital to a successful outcome in Geneva, the deal with the U.S. textile industry clears the way for Congress to waive the administration's obligation to impose countervailing duties on subsidised goods entering the U.S. Until Congress extends this waiver, foreign countries have refused to sign a Geneva accord.

The mood in Congress now seems to favour a quick resolution of the waiver saga, with Mr. Charles Vanik, who chairs the House of Representatives trade sub-committee, forecast-

ing that the waiver extension could be ready for a vote by the full House by the end of this coming week.

Mr. Robert Small, president of the American Textile Manufacturers Institute, welcoming the new textile agreement, said that while it would not roll back textile and apparel import levels, it would bring future import growth back into line with that in the domestic market.

Key to the agreement are the provisions to stem future disruptive "surges" in imports. From the 18 countries with which the U.S. already had bilateral agreement under the umbrella of the Multi-Fibre Arrangement, the three most important of these are Hong Kong, Taiwan, and South Korea, accounting for nearly half of U.S. imports.

# Dutch banks may back Algerian gas contract

By Charles Batchelor in Amsterdam

PROSPECTS have improved for the signing of a contract for the delivery of 160bn cubic metres of Algerian gas to Holland and West Germany.

A number of Dutch banks will form a consortium to make a proposal, for the financing of the deal, to Sonatrach, the Algerian State oil and gas company.

This follows an announcement by the Dutch export credit insurance company (NCM) that it is prepared to make a "unique" offer to insure the financing of the project. The Dutch have now agreed to extend, for the second time, the deadline given to Sonatrach to complete the deal, until March 31.

In an unprecedented move the privately-owned NCM said it will insure 80 per cent of any loan up to a total of Fl 250m (\$125m) and reinsure the risk fully with the Dutch state. The NCM does not normally finance untied credits.

It has however set three conditions. Sonatrach must agree to designate Arzew as the site for the gas liquefaction plant and tanker terminal. West German banks must also be prepared to provide up to Fl 250m in financing, and finally, Sonatrach must declare that the funding of the project has been satisfactorily completed.

The importance of the Algerian contract for Holland's energy policy has clearly been the major factor in persuading the Finance Ministry to approve the novel insurance plan.

The Dutch hope to sign more contracts to import LNG to supplement the country's own large but declining reserves.

The NCM's offer has persuaded the previously hesitant Dutch banks to reconsider financing part of the project. The three largest banks, Amsterdam-Rotterdam Bank (AMRO), Algemene Bank Nederland and Centrale Rabobank said they were involved in forming a consortium. Gasunie, the national gas distribution company, said the outlook for the project is now more positive.

# World shipbuilding orders fall 34%

BY IAN HARGREAVES, SHIPPING CORRESPONDENT

THERE WAS a 34 per cent drop in the volume of shipbuilding orders placed last year, compared with 1977, and the established shipbuilding nations continued to lose market share to the growing yards of the developing world.

According to the latest annual of statistics from Fairplay. International, orders placed last year slumped to 915 ships totalling 13.7m deadweight tons, against 20.8m dwt in 1977.

This was in spite of a further proliferation during the year of government subsidy schemes for shipbuilders, which enabled them to lower prices and extend credit terms to customers.

The report says the height of this bidding for orders was reached with a set of tenders for six 16,500 dwt cargo ships for Pakistan. Japan won the order with a bid based on 100 per cent credit spread over 30 years with no payments in the first 10 years and a 3 per cent rate of interest thereafter.

In spite of Japan's keen attack on the developing country market in the closing months of last year, the world's biggest shipbuilders lost market share last year, taking orders for 308 ships off 5.5m dwt—a 40.5 per cent share of the total, compared with 47 per cent a year earlier. This reflects Japanese shipbuilders' problems with the appreciating yen.

A number of other leading

shipbuilders also lost ground, including Holland, UK, Norway, and Spain, with shares of 1.8, 2.3, 0.7, and 2.9 per cent respectively, measured by deadweight tonnage.

Brazil (1.8 per cent), South Korea (5.8), Poland (5.9), Sweden (7.8), and Taiwan (3.1) all improved their shares.

The trend towards the new

Because Fairplay's figures are measured in deadweight tons, shipbuilders specialising in more sophisticated but smaller craft tend to show up badly.

Last year, the scale of ordering for some of these specialist ships, notably container vessels, increased against the general trend. Fairplay records 124

tanker orders, which fell from 5.6m dwt to 4.8m dwt. Bulk carrier orders fell very sharply, from 5.8m dwt in 1977 to 2.3m dwt last year.

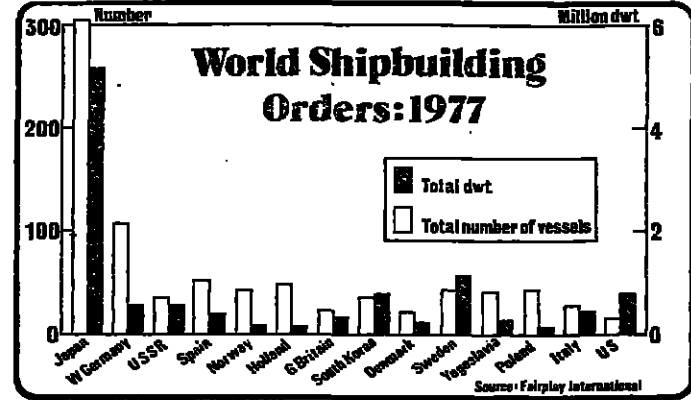
Last year was also one in which Greek owners drew back from the new building market, after suffering escalating prices on existing yen-based contracts placed in Japan.

Only 13 ships were ordered by Greek owners last year, compared with 85 the year before.

Japanese interests remained much the biggest purchasers, ordering 154 ships of 2.1m dwt. U.S. owners came next, stimulated by the release of Federal subsidies, with 62 orders totalling 1.8m dwt. Hong Kong owners, who represent a rapidly growing force in the industry, were third in terms of tonnage, with 29 ships of 1.2m dwt.

Encouraged by the shipyards' bargain offers, a number of developing countries sought to expand their fleets and the list of countries whose rate of ship ordering increased last year, makes interesting reading: China, the U.S., Brazil, Indonesia, Pakistan, Australia, Turkey, Japan, Italy, Romania, East Germany, Finland, Malaysia and Iran.

The Newbuilding Market 1978, Fairplay International Records and Statistics, Minister House, Arthur St, London EC2R 8AN, £25 UK, \$65 Europe, \$80 outside Europe. The 1979 Fairplay World Shipping Yearbook (1981) is available from the same address.



# Wheat deal failure played down

BY BRIJ KHANDARIA IN GENEVA

THE FAILURE of the wheat conference has produced a sudden change of tone in some Western delegations here who are now trying to play down the importance of cereals as part of the Tokyo Round trade package.

Delegates point out that wheat was always kept separate from the Tokyo Round although it was formally listed as an item in the agricultural sector. Failure to conclude a new wheat arrangement to replace the 1971 accord, which was extended here on Wednesday, is now being presented as something regrettable but not harmful to the Tokyo Round.

Earlier in the trade talks the United States repeatedly said that a package without wheat

was difficult to conceive. The Common Market fought a long and hard battle with the U.S. to obtain inclusion of a separate accord on "secondary grains" alongside the planned wheat accord, but the wheat conference failure has also meant that their will be nothing in the overall Tokyo Round package on such grains.

Nor will there be a food aid convention immediately to ensure food security and sufficient grain supplies for developing nations that might experience food shortages.

However, a separate series of negotiations is likely on food aid later in the year and Mr. Dale Hathaway, U.S. Assistant Secretary of State for Agricul-

ture, indicated here that his Government would be willing to offer bigger quantities to poorer nations. But now it is an open question whether there will be a new food aid convention.

Mr. Hathaway said, however, that the U.S. would be ready to contribute an amount equal to total contributions made into any food aid reserve stocks by other nations, up to a ceiling of about 5m tonnes out of a total of 10m tonnes.

Although developing nations import about 22m tonnes of wheat annually, for the poorest among them the availability of adequate food aid stocks is more important than having an international wheat arrangement.

# New cheap U.S. flights

TRANS INTERNATIONAL, a U.S.-based airline, plans to introduce cheap once-weekly flights between Frankfurt and New York this summer, at rates as much as 50 per cent below existing fares.

Fares on the Frankfurt to New York route will be DM 499 (£136) single in the off-peak season and DM 599 in the peak.

# World Economic Indicators

Country	INDUSTRIAL PRODUCTION				% Change over previous year	Index base
	Dec. 78	Nov. 78	Oct. 78	Dec. 77		
U.K.	111.3	109.6	108.9	106.3	-4.7	1975=100
U.S.	150.4	149.5	148.5	139.6	+7.7	1967=100
West Germany	124.3	130.7	124.6	115.2	+7.9	1970=100
Italy	118.6	137.0	141.6	113.5	+4.5	1970=100
France	132.0	130.0	129.0	123.0	+7.3	1970=100
Holland	120.0	132.0	121.0	116.0	+3.4	1970=100
Belgium	125.5	125.2	124.4	119.6	+4.9	1970=100
Japan	125.3	124.1	124.4	117.3	+6.8	1975=100

# Malta's new Red China Dock raises hopes

BY A SPECIAL CORRESPONDENT

AMIDST A generally depressing situation in Mediterranean shiprepairing, bustling Malta Drydocks seems likely to announce another good year since being converted in 1959 to merchant ship repairing from being a major naval base.

The change-over from naval work to commercial work is never easy, and in some drydocks has failed entirely, but Mr. J. Calleja, general manager of Malta Drydocks, with a workforce of 5,200, confidently predicts that his company's turnover will exceed its forecast of \$42.5m for the current financial year.

While some Mediterranean repair yards are closing and others are desperately in need of work, Mr. Calleja and his team estimate that the turnover for the next financial year will be at least maintained, possibly exceeded.

Since Malta needs to buy in

so many materials and items of equipment, there is understandable reluctance to forecast profits when so many costs are beyond the company's control.

Certainly on the basis of recent experience, prospects of maintaining turnover are enhanced—more especially so since in mid-1979 the company's big new Red China Dock will come into operation.

This will accommodate super-tankers and other ships of up to 300,000 tonnes d.w. and its imminent commissioning must already be causing concern among other drydock operators in the Mediterranean.

Even at this stage major tanker operators are supplying docking details of ships likely to use the new facility. Malta already has a healthy business in repairing ships for other Mediterranean countries, some with their own very substantial drydocking and repair facilities.

Much of Malta's success is attributed to its strategic geographic position and in the current calendar year the docks utilisation has been 97 per cent. Moreover many of the ships are from nearby Italy, Greece, Spain, and Arab states.

Nations represented by 65 flags have used Malta's repair facilities in recent years. Even new ships built in Yugoslavia's yards are frequently sent to Malta for drydocking prior to sea trials and delivery.

According to Mr. France Spiteri, chairman of Malta Drydocks, prices alone is not a reason why his company is thriving, even expanding, at a time when so many other repairers are struggling to survive.

He explains that Malta has not even the advantage of being a terminal port which inevitably attracts business, nor has it a

major national fleet. Instead he attributes the progress to its reputation of being able to offer and adhere to good delivery dates and providing work of consistently good quality.

The Drydocks are also shipbuilders in a modest way and two small tankers for China have been built. Ships up to about 10,000 dwt can be built and there is demand for large, single-point mooring buoys. Diversified activities also include general engineering work and a growing structural steelwork business for civil engineers building warehouses, factories, workshops and bridges.

At a time when several shiprepair and shipbuilding companies are experimenting with or announcing agreements for workers co-operation in management, Mr. Spiteri and his workers' council point out that they have not had a strike since 1971.

# Rockware - leading the way home with Widemouth

For the first time since the advent of the ring-pull can over ten years ago, a major packaging innovation for beers and soft drinks is now in retail distribution.



The Widemouth bottle from Rockware Glass is being adopted increasingly by both brewers and soft drinks manufacturers as a strong alternative to the can.

Rockware developed this container in the knowledge that research confirmed glass as being traditionally preferred by beer drinkers. Also confident that soft drinks sales could only benefit from

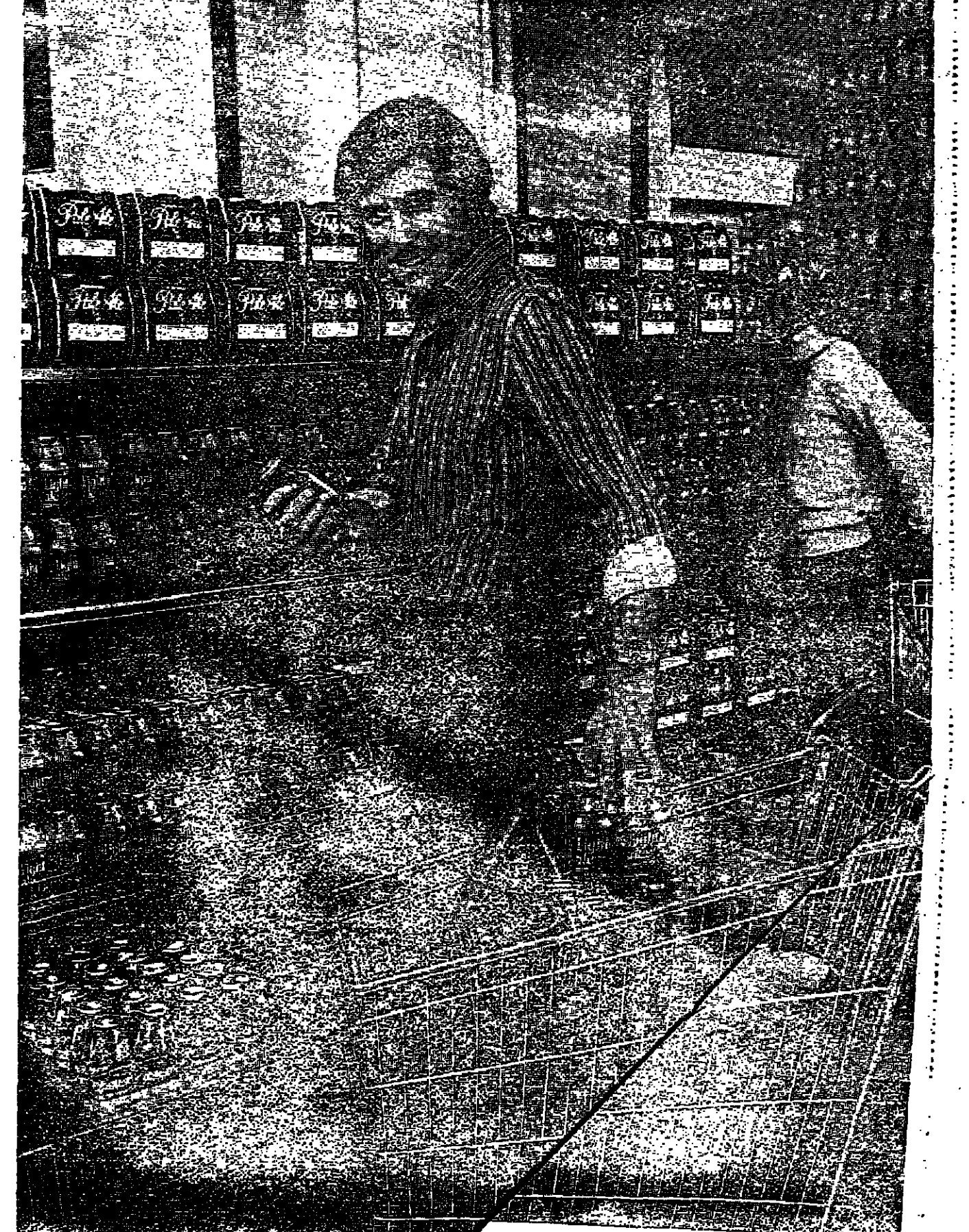
being packed in a Widemouth convenience container. Hence the Widemouth, with its ring-pull closure, plain lip for drinking, lightness and modern image—a host of advantages for consumer and packer alike. Added to these quality features are opportunities for faster filling speeds with resulting unit cost savings.

Rockware's new Widemouth has already had significant impact on the packaging market. The beer bottle, for example, has collected impressive packaging awards against severe competition.

Widemouth is available in a variety of sizes for both beers and soft drinks. For further information, comprehensive technical advice and installation expertise, call Rockware—our revolution in packaging for the 1980's is here.

**ROCKWARE**  
package appeal

Rockware Glass Limited, Riverside House, Riverside Way, Northampton NN1 5DW Telephone 0604-2255. Telex 311473.





UK NEWS

# Europe's MPs are warned against 'power grabbing'

BY REGINALD DALE

THE directly elected European Parliament should adopt a pragmatic, cautious attitude to its work and not seek to grab power by openly clashing with the EEC's other institutions.

This "realistic" if low-pitch approach is recommended by Mr. Christopher Tugendhat, European Commissioner for the Budget, in a pamphlet published today by the Conservative Political Centre. It admits that to some such a programme may seem "uninspiring."

After the first direct elections in June the new members of the European Parliament should seek to complement rather than emulate national Parliaments in their pursuit of influence over EEC decisions, Mr. Tugendhat warns.

The key to success for the directly-elected Parliament is to

be found in developing democratic control in areas where it does not already exist, he argues. This means "finding new fields" to conquer rather than seeking to camp out on someone else's already well-cultivated front garden.

The Community's Treaties already clearly set out the legal basis of the relationship between the main institutions, and, unless it is prepared to mount a challenge to the member states, the Parliament must work within this framework, Mr. Tugendhat says.

If the directly-elected MPs yield to temptation to set their sights upon acquiring power, in relation to the Community's other institutions, analogous to the powers enjoyed by national Parliaments in relation to national Governments, they

would not only be pursuing an entirely inappropriate path but also one likely to be extremely damaging to the European Parliament's prospects of increasing its influence.

"It would be bound to lead to a major constitutional collision with the Council of Ministers in which the Parliament would be certain to sustain the severest injuries."

The Conservative Party's strong commitment to the EEC is stressed in the party's initial campaign guide for direct elections also published in London today.

*Conservatives in Europe*, Christopher Tugendhat, Conservative Political Centre, 32, Smith Square, SW1P 3HH; price 60p.

*Campaign Guide for Europe 1979*, Conservative Central Office, 32, Smith Square; £2.75.

## Household insurance likely to rise 25%

BY ERIC SHORT

A 25 per cent increase in premium income for British insurance companies on household accounts this year is forecast by stockbrokers Wood Mackenzie in its latest review of composite insurance companies.

It points out that the household account has been the most troublesome for composite companies in recent years, resulting in large losses for those involved. Two factors have affected this class of business: abnormally high weather losses and a rising number of claims in particular for thefts. Insurance company crime losses, the review states, have risen from £23m in 1973 to £84m in 1977.

The problems have been aggravated by policyholders not raising their insurance to take account of rising values, in money terms, of both houses and their contents. This has resulted in claims costs rising faster than premium income.

The review describes measures taken by the insurance companies to overcome these problems and restore profitability to the

householder accounts. The companies have endeavoured to lift the sums insured to the correct level by index linking. They are now imposing severe penalties on those policyholders who do not keep sums insured up-to-date.

Finally, the companies have increased the premiums rate on contents to cover the rising number of claims—the latest leading composite company to take such action being Royal Insurance.

Wood Mackenzie expects to improve premium income of composites in 1979 by 25 per cent, and considers that this rise should alleviate the more urgent problems on the household accounts.

But over the longer term, it considers that further corrective action will need to be taken, such as increasing the premium rates on buildings and making policyholders pay a higher proportion of any claim. Such action is likely to be necessary because weather losses are becoming increasingly frequent and subsidence claims will in future be a regular feature.

## Decision soon on Tarling appeal

By Tim Dickson

MR. RICHARD TARLING, the former chairman of Haw Par Brothers International who faces extradition to Singapore, is expected to hear in the next few days the outcome of his appeal to the Home Secretary.

Representations were made last week by Mr. Tarling and his counsel, Mr. Louis Blom-Cooper, QC.

Mr. Tarling, who was once a business colleague of Mr. Jim Slater, faces extradition on five company law charges relating to the 1972 and 1973 accounts of Haw Par.

This month the Lords' Appeal Committee refused him leave to challenge a ruling by the Queen's Bench Divisional Court that it would be neither "unjust" nor "oppressive" to require him to return to Singapore to face the charges.

At the time Mr. Tarling's counsel argued against extradition on account of the lapse of time since the alleged offences, and because the charges were "trivial," and did not involve dishonesty.

## Britain worse off but the slide can be halted

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

BRITAIN'S economic position has deteriorated in the last three months but is still containable provided the political circumstances do not inhibit the Government's apparent desire to limit public sector borrowing, according to Mr. Terry Burns of the London Business School.

Writing in the *ISIS Bulletin*, published by City stockbrokers Laurie Millbank and Company, Mr. Burns argues that as long as the trade balance is in surplus the UK should avoid any runaway inflation, although the price of a strong pound will be profits' weakness.

Mr. Burns' restrained pessimism, or perhaps cautious optimism, is similar to the view held by many influential City and academic economists. Although the rate of increase in earnings in the current round looks like being higher than assumed last autumn, and the

bad weather and lorry drivers' strike are temporarily boosting prices, the rate of price inflation should not accelerate this year back to the levels of the mid-1970s.

On this view, provided sterling remains stable, the 12-month rate should at worst not move much above the 10 to 13 per cent range.

Mr. Burns argues that "it is possible to be hopeful even if the growth of earnings is between 12 and 15 per cent. With sterling remaining strong and the balance of payments in surplus the increase in the inflation rate is likely to be limited otherwise a major loss of competitiveness would ensue."

"This will limit the monetary squeeze on the personal sector although company profitability will suffer. Output growth, excluding North Sea oil, would be modest, but there would be no major recession and some recovery might emerge in 1980.

## Certificate lifts National Savings

BY TIM DICKSON

BIG FLOWS into the new 18th certificate boosted net National Savings receipts to £161.7m in the four weeks to February 2.

The total more than doubles December's £75.7m, although the savings market is traditionally sluggish during that period.

The main impetus last month came from the high yielding 18th certificate launched at the end of January. In its first five days, the new issue attracted £61m, leaving a net intake for issues apart from the retirement issue of more than £65m.

Both the National Savings Ordinary and Investment

accounts had their best month for a year. An important factor was the increase by 2½ points to 12 per cent at the start of the month in the interest paid on investment accounts.

The net inflow of £22.4m into the investment account in fact has helped stem previous net withdrawals, which in the first 44 weeks of the financial year 1978-79 amounted to £405m.

Total remaining funds administered by the Department of National Savings now amounts to more than £11bn, compared with £9.8bn a year ago.

## Irish party seeks closer Ulster ties

A POLICY document urging a close political alliance between Ulster and the Republic of Ireland was published today by Fine Gael, the republic's main opposition party. The proposals were announced simultaneously in Dublin, Belfast and London.

The plan follows a year-long study instigated by Dr. Garret FitzGerald, the party's leader and former Irish Foreign Affairs Minister.

The results of similar examinations undertaken by the Irish Government party Fianna Fail and the Irish Labour Party will be announced shortly.

Dr. FitzGerald stressed that the Fine Gael proposals were not "an attempt to sketch out a blueprint for a united Ireland."

He added that Fine Gael did not expect the plan to change the political situation in Northern Ireland overnight.

The document urges a close political alliance, perhaps a federal North-South system, between the two parts of Ireland.

Among the proposals is the possibility of a police force which could operate freely throughout Ireland.

## Bid to improve shop efficiency

By Our Consumer Affairs Correspondent

A PROJECT to improve labour efficiency in the retail trade has been launched by the National Economic Development Office in conjunction with the industry's training board.

The project, which is expected to take 15 months to complete, will use case-studies to show how greater efficiency can be achieved, leading to more pay for employees and better store performance.

## Slower growth is forecast

BY DAVID FREUD

BOTH long- and short-term interest rates now look extremely high in real terms, and this is likely to cause significantly slower economic growth this year.

The City stockbrokers Montagu Loeb Stanley says there must be a sustained reduction by either the public or private sector if rates are to fall.

In its economic circular the firm states that though it views the prospects for the public-sector borrowing requirement with more confidence than some other commentators, it is unlikely that maintenance of the requirement at £5.5bn will allow a sharp fall in rates.

The reduction in loan de-

mand will therefore have to come from the private sector, and is likely to be the result of slower growth in gross domestic product.

"We would therefore be surprised to see the current high level of short-term interest rates persist beyond the summer months, and reductions in minimum lending rate should occur at that time."

In summary, the firm forecasts that average earnings are unlikely to rise by more than 15 per cent in 1979, and that at worst price inflation will reach only 12 per cent.

It believes economic recession is probable, and that GDP growth will not exceed 2 per cent in 1979. The public-sector borrowing requirement is not

expected to rise above £5.5bn in the 1978-79 fiscal year, and the Government will probably achieve its £8.5bn target.

The City stockbrokers James Capel believes that the year-on-year inflation rate will be at least 13 per cent by the last quarter of the year.

A deflationary Budget of £1.75bn would be required to reduce the public-sector borrowing requirement to a level consistent with the forecast £5.5bn and continued monetary restraint.

Such fiscal measures, the result of a 15 per cent rise in average earnings, will exacerbate the slowing in output and demand in the second half of the year and add to inflation, says the firm.

# Lloyds Bank Group Results 1978

## Group profit before tax was £182m

This is a 9.6% increase over the figure for 1977, but because of inflation is worth little more in real terms. International activities produced much the same profit; UK earnings benefited from good growth in current account balances and lending.

## Out of this, tax takes £59m

Changes in accounting for deferred taxation have reduced this.

## and proposed dividends take £17m

The maximum permitted, this is a small increase in real terms, the first for six years.

## so profit retained is £106m

This contributes to shareholders' funds now amounting to £1,034m and helps to support world-wide operations and a balance sheet totalling £14,750 million.



# Lloyds Bank Group

Rights Offering

## The Bank of Nova Scotia Offering of 5,156,250 Additional Shares (par value \$1 per share)

The Bank of Nova Scotia is offering to its shareholders of record on February 7, 1979, the right to subscribe for additional capital stock on the basis of one new share for each eight shares held. Transferable subscription warrants have been mailed or delivered to shareholders. Rights may be bought or sold on most Canadian and United Kingdom stock exchanges.

**Subscription Price: \$21.75 per Share**

The rights expire at the close of business on March 15, 1979

For full particulars, reference should be made to the formal offer from the Bank to its shareholders dated February 12, 1979. In addition, an information circular has been prepared. Copies of the above and assistance regarding this offer may be obtained from any of the undersigned.

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## Problems for Hemerdon may be solved soon

BY PAUL CHEESERIGHT

THE LEGAL tangles surrounding the ownership of Hemerdon Mining and Smelting which is involved in what could be the biggest UK metal mining project of this century, are close to being unknotted and may be settled in the Supreme Court of Bermuda next month.

The company is in a joint venture with Amax Exploration of the U.S. to decide whether a tungsten-tin-china-clay deposit at Hemerdon Ball, outside Plymouth, can be exploited. It was originally set up by Mr. W. A. Richardson, who raised money for it largely in Canada and the U.S.

No shares of the 5m in issue have ever been allotted. They are held in trust by a bank in Bermuda, where the company is registered, by order of the Supreme Court. Legal problems have arisen about the rightful ownership of the shares.

"We are getting closer to reaching an understanding with Mr. Richardson, that he will assist and co-operate with the trustee rather than delay and frustrate," Mr. Uwe Manski of Dunwoody of Toronto said at the weekend.

Dunwoody has been appointed trustee for the grubstakers — those who financially supported Mr. Richardson — by the court.

Mr. Richardson, whose executive control of Hemerdon ceased in December 1976, claims 1m shares. The problems faced by Dunwoody in its negotiations with him centre on the fact that 1,600 grubstakers claim a right to a total of a further 9m shares. Thus there are claims to

double the amount of shares in issue. Records of share promises in the 1960s and early 1970s held by Dunwoody tally to some degree with records held by Mr. Richardson, but difficulties have arisen about those who have been offered shares in payment for services given to Mr. Richardson.

It seems likely that Dunwoody will be able to go back to the Supreme Court in Bermuda next month with a partial list of potential shareholders agreed with Mr. Richardson and the present Hemerdon management but that the court itself will have to rule on contested claims, including that of Mr. Richardson.

If the issue of share ownership is settled the company can press ahead with plans for over-the-counter trading of its shares in the U.S. This will open the way to raising new finance if there should be a decision to exploit Hemerdon Ball.

The company's immediate financial problems over investigation of the deposit were eliminated when its joint venture agreement was signed with Amax, which is shouldering the costs of drilling, metallurgical testing and economic feasibility studies.

Any decision on mine development in the early 1980s will involve Hemerdon in finding funds for capital investment, if it is to maintain a 50 per cent interest in the project.

## Planners agree CBI's Centre Point plan

By John Elliott, Industrial Editor

THE Confederation of British Industry has cleared one of the hurdles it was facing in its attempt to take over London's Centre Point office block as its headquarters.

The planning committee of Camden Council approved the CBI's application to convert the block's showrooms into a council chamber. Without this approval, which has to be ratified by the full council, the CBI would have abandoned its interest.

It is, however, still not certain that the CBI will occupy Centre Point, which has been virtually empty since it was built in 1965. This is because publicity given in December to the CBI's interest has led to other buildings being brought to its notice.

The developers of a building in the Vauxhall Bridge Road, also a possible future home for the CBI for many years, are believed to be considering new initiatives.

Nevertheless, Centre Point remains the front runner. Providing no snags emerge, the CBI will now have to decide whether it considers it is worth spending some £2.5m on converting the bottom half of the 30-storey office block to its needs.

## Yuki weaves link with Rivington Reed

BY RHYS DAVID, TEXTILES CORRESPONDENT

YUKI, the Japanese fashion designer based in London, is getting together with Rivington Reed, the Lancashire textile group headed by Dr. John Blackburn, in a link-up which could have an impact on British fashion fabrics.

The move, which is certain to cause considerable interest in the textile industry, goes beyond the conventional licensing agreement under which designers produce ranges which are then marketed under their name.

Rivington Reed is acquiring a controlling interest in a new company, Yuki, which becomes an associate company publishing all Yuki designs.

The arrangement is something of a coup for Dr. Blackburn, who has developed a reputation in the textile industry for his marketing skills.

Before joining Wm. Reed, as it was two years ago, he held senior board positions with Vantona and previously with Carrington Vivella, where he was one of the pioneers of the colour and design revolution which has overtaken household textiles such as sheets.

The deal will therefore unite marketing and design skills, and if it proves successful it could bring considerable advantages to both sides, and indeed to the UK textile trade balance.

which includes Barbra Streisand and Margaret Thatcher among its clients. It will obtain organisational and financial backing to develop further its existing design business.

It could therefore advance from being an admired concern in the world of high fashion to a position alongside the household names of textile design such as Mary Quant and Hardy Amies.

The intention is that Yuki, who would himself act as managing director with Dr. Blackburn as chairman, should operate in three main areas. They are haute couture, where Yuki has established a reputation for

lavish use of very fine denier women's wear fabrics; ready-to-wear, an area where Rivington Reed believes it can help Yuki expand; and other non-apparel areas, where it is hoped to build up new business.

Dr. Blackburn said yesterday that Yuki would remain an independent company, free to enter into licensing agreements with other companies, although with some limitations if there was a conflict with work being done for Rivington Reed.

Besides giving Yuki the chance to develop into new fields, the arrangement provides a firm indication of Dr. Blackburn's own ambitions for his

group. When he arrived, much of its business was tied up with the declining men's suit trade, as one of the leading suppliers of woven filament fabric linings to the big made-to-measure groups.

Dr. Blackburn took the carpet industry by surprise soon after arriving by acquiring from the Receiver the Rivington subsidiary of Bond Worth and he has since moved further into the carpet industry despite the problems of over-capacity, with further acquisitions in Ireland and the UK.

The link with Yuki is meant primarily to fit in with moves Rivington Reed has been making to involve itself more

deeply in fashion fabrics, in particular the more expensive ranges which UK garment makers are having to buy from the Continent.

The group has moved into the manufacture of velvet through Dendle Fabrics and is using its expertise in the lining field to expand into manufacture of very fine woven textured polyester, a fabric now in strong demand.

Dr. Blackburn said he was hoping that Yuki, who is now British, but was trained as a textile engineer in the U.S. and Japan, would be bringing out ranges soon in Rivington Reed's velvet and in woven textured polyester.

## Loans spur machine tool growth

BY HAZEL DUFFY, INDUSTRIAL CORRESPONDENT

THE FINAL tally of aid offered by the Government to the machine tool industry is £35.8m. Investment by the industry is expected to have increased substantially as a result of the scheme.

If all the projects on which aid has been offered were to materialise, the total investment by the industry with the help of Government will be nearly £176m. In practice, some projects are expected to be dropped

or scaled down. But the Department of Industry is still budgeting for about £32m of aid to be taken up, against an allocation by Government of £30m.

Success

Alfred Herbert will be the biggest beneficiary from the scheme, with more than £4m aid offered. Other companies receiving substantial amounts include Wickman (part of the

John Brown group), the 600 Group, and Adcock-Shipley.

The Department received 438 applications from the industry, of which 123 were rejected or were withdrawn by the companies.

The scheme, considered to be one of the most successful for aid to industry, was designed to promote investment in buildings, machinery and product development.

Companies seeking to rationalise production, or wanting the services of consultants, were also eligible.

In practice, plant and machinery and product development have proved the most attractive aspects of the scheme.

Assistance towards investing in new machinery will total nearly £18m, resulting in investment of more than £91m, while some £14m has been offered towards product development projects totalling £58m.

## Verdict tomorrow on two Clydeside plants

BY LISA WOOD

THE FATE of Marathon Shipbuilding, of Clydebank, and Goodyear Tyres of Drumchapel, both U.S.-owned, will probably be decided tomorrow. Both plants risk closure with the loss of nearly 2,200 jobs.

Mr. Bruce Millan, Scottish Secretary, is to meet Mr. Gene Woodfin, chairman of Marathon Construction, of the U.S., tomorrow in an attempt to reverse the company's rejection of a Government order for an oil-drilling rig from the Clydebank yard.

Goodyear's management is simultaneously to make a statement on the future of its Scottish tyre plant.

More than 500 Goodyear workers rejected a management scheme to cut losses by revising working practices. The management had threatened closure if they rejected the plan. Redundancies would have been limited to 57 in the company's proposals.

The British National Oil

Corporation has been negotiating with Marathon on behalf of a state consortium including British Gas and the Scottish Office. It refused to pay more than £11m for a rig, but the company is believed to want £500,000 more.

Marathon employs 1,100 workers and has only a few weeks' work left.

Mr. Millan wants the Marathon yard to remain open, but is unlikely to be able to increase the offer because of Treasury opposition and the danger of infringing international agreements on the level of state aid to commercial manufacturers.

Mr. Jimmy Reid, outfitting convener at Marathon, said last week that it was scandalous that negotiations had been broken off over such a paltry sum.

The workforce has offered to increase productivity to cover the price gap between the Corporation's offer and what Marathon is prepared to accept.

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upholstered and contoured to the shape of your body. They're also covered in a luxurious new cloth fabric that feels as soft as wool. This same fabric has been lavishly used throughout to line the doors, pillars and roof. Behind, there's 18 cubic feet of boot space to comfortably take care of your luggage. There's a full complement of instruments, including an electronic rev counter; an independently controlled heating and ventilation system for passengers in the rear and Lancia's renowned front wheel drive for precise handling and road-holding.

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## Lamb imports put into store as price drops

FINANCIAL TIMES REPORTER

NEW ZEALAND is to reduce supplies of lamb available in Britain by putting large quantities into store, in an attempt to stop prices falling.

The lorry drivers' strike in January has resulted in large supplies of New Zealand lamb building up just at a time when new-season shipments start coming in. The prospect of an influx of supplies has pushed prices down sharply and already lowered the return to New Zealand farmers.

A spokesman for the New Zealand Meat Producers Board in London confirmed yesterday that meat exporters in New Zealand had been asked to arrange for an extra quantity of lamb shipments to be put into store in Britain.

He said that talks were going on with the meat trade in Britain on ways to stabilise the decline in prices.

It is reckoned that about 10,000 tonnes of New Zealand lamb may be put into storage out of the 25 to 30,000 tonnes shipped to the UK this month. New Zealand is understood to fear that if its lamb prices fall too low in Britain there may be

repercussions from continental members of the European Community.

## Mirror shelves Glasgow plans

By Ray Ferman, Scottish Correspondent

MIRROR GROUP, the Reed International publishing subsidiary, has shelved plans to start a new evening newspaper in Glasgow.

Preparations were well advanced. The title, PM, had provisionally been chosen and dummy editions had been printed.

But Mirror and Reed executives have decided that the project should be put off at least until the autumn. Mirror Group already publishes successful morning and Sunday newspapers from Glasgow. The city's only evening paper is the Evening Times, published by George Outram, a subsidiary of Scottish and Universal Investments.

## Coopers and Lybrand to probe Channel plans

BY LYNTON McLAIN

THE EUROPEAN Commission has awarded Coopers and Lybrand Associates a contract to study proposals for a road and rail link between Britain and France.

A variety of proposals will be examined, including the British Rail plan for a £650m single bore rail tunnel under the Channel.

Other proposals expected to be studied include a combined road-rail tunnel which would surface

at suitable points near sand banks. Bridges will also be studied, but the company will be concerned more with revising earlier traffic flow estimates, than with engineering cost evaluations.

The study is to be undertaken to illustrate an EEC Commission study, part of which is also being carried out by the company, on how best to measure the benefits to the Community of major infrastructure projects.



# UK NEWS - LABOUR

## Hospital and council staff may have similar deals

BY NICK GARNETT, LABOUR STAFF

A PAY OFFER similar to that which may be reached for local authority manual workers in the next few days is now seen by national union officials as a way out of both the hospital ancillary and ambulance men's disputes.

Council employers and union representatives meet Mr. Peter Shore, the Environment Secretary tonight to discuss a self-financing productivity deal to give a modest topping-up above the 9 per cent offer on Friday.

Both sides meet again, possibly on Wednesday, for further discussions on productivity if today's meeting makes reasonable headway.

A large number of employers are doubtful if a productivity deal could be accurately gauged in terms of self-funding, but the unions believe a self-financing deal based on increased flexibility and improved efficiency can be devised immediately in double figures.

The local authority manuals have also been offered a pay comparability study which holds

out the possibility of more money in August and in the following April.

Union leaders are prepared to recommend the 9 per cent provided agreement is reached on productivity. If it is not reached, the offer is still likely to go out to the membership, but with no recommendation.

The Government proposes that the Standing Commission which would make a comparability study of local authority pay would be used for other public services.

National union officials involved in the health service dispute have already been told privately that they will also be offered 9 per cent.

If a productivity deal can be worked out for these groups, with the promise of a comparability study, the 9 per cent offer would almost certainly be recommended for acceptance.

It is unclear if that recommendation would be accepted by health service workers. A national conference of ambulance men's shop stewards,

at which there may be some indication on this point, meets tomorrow.

Further pay talks in the health service are expected within the next week.

A national conference of Transport and General Workers' Union delegates representing water industry workers at the weekend accepted a deal worth 16 per cent.

This follows a similar decision by members of the General and Municipal Workers' Union. The decision by members of the National Union of Public Employees will be known next Monday.

Mr. Frank Chapple, general secretary of the Electrical and Plumbing Trades Union, said yesterday that the activities of some pickets involved in the local authority dispute were no better than those of terrorists.

Paying particular groups of workers sizeable increases simply because they received so little would be disastrous for the country, he said.

## Railway drivers' threat lifted

By Our Labour Staff

TRAIN DRIVERS in two of Southern Region's three divisions yesterday called off their unofficial one-day strike on Wednesday which would have affected London's Underground services.

The decision to postpone any unofficial action until after March 18 was taken by local officials of ASLEF, the train drivers' union, representing depots in the south-eastern and central divisions.

Leaders of drivers in the south-western division, covering services to and from Waterloo meet today to vote Mr. Ray Buckton, the union's general secretary, last week appealed to the men to suspend industrial action while an independent tribunal prepares its report on a national drivers' claim for a 10 per cent special responsibility payment.

Some union and British Rail officials are doubtful that the tribunal, whose hearing has now ended, can find new ground on which a solution acceptable to all sides could be based.

## Bid to prevent Dunlop closure

By Our Labour Staff

PROPOSALS to prevent the closure of Dunlop's Speke plant on Merseyside are likely to be drawn up today at a special union conference.

It will involve Mr. John Miller, Transport and General Workers' Union national secretary and national and local representatives of all unions at Dunlop. The idea is to resist threatened redundancies at two of the company's other plants.

Last week Mr. Miller and Mr. Moss Evans, the Transport Workers' general secretary, met Mr. John Smith, Secretary for Trade, about the problems caused by cheap European tyre imports.

Dunlop has blamed cheap imports and low productivity for the Speke closure, involving the loss of about 2,400 jobs.

Dunlop plans cuts at its Birmingham and Scottish plants with the loss of a further 750 jobs.

## Civil Service pay unit findings to aid industrial worker's deal

BY PHILIP BASSETT, LABOUR STAFF

INDUSTRIAL civil servants, who caused political embarrassment in their pay campaign last year by blacking three of Britain's four nuclear submarines, will base negotiations for their July settlement on pay comparisons made by the white-collar Civil Service's pay research unit.

A settlement due in April for the 600,000 white-collar civil servants will be based on the unit's findings, which show rises due of 26.36 per cent for middle-ranking grades. Progress is being examined by union officials representing the 182,000 industrial workers.

Full results of a separate survey for the industrial workers are expected about May, but union officials are confident that comparisons with outside industry must show rises due of between 15 and 30 per cent.

Officials representing white and blue-collar civil servants have been regularly meeting jointly to chart the progress of the white-collar personnel's fight to win full implementation of

the unit's findings, in spite of the Government's 5 per cent limit.

Industrial workers regard the outcome of the white-collar negotiations, including the offer of a staged deal, as crucial to their settlement. The promise of a comparability settlement for this year's deal was central to last year's Government's agreement with the unions on a 10 per cent deal to prevent repetition of embarrassing industrial action.

Last year, action included one-day strikes at naval dockyards and stoppages by House of Commons and Whitehall drivers, messengers and other staff.

The submarine's blacking had to be broken by the Navy. The Civil Service Department has provided the pay research unit with extra resources to deal with the industrial workers' comparability study.

The unit is drawing up its report on an agreed list of companies after visiting comparable jobs in oil and chemical engineering, ship-

building, marine engineering, construction, transport and distribution.

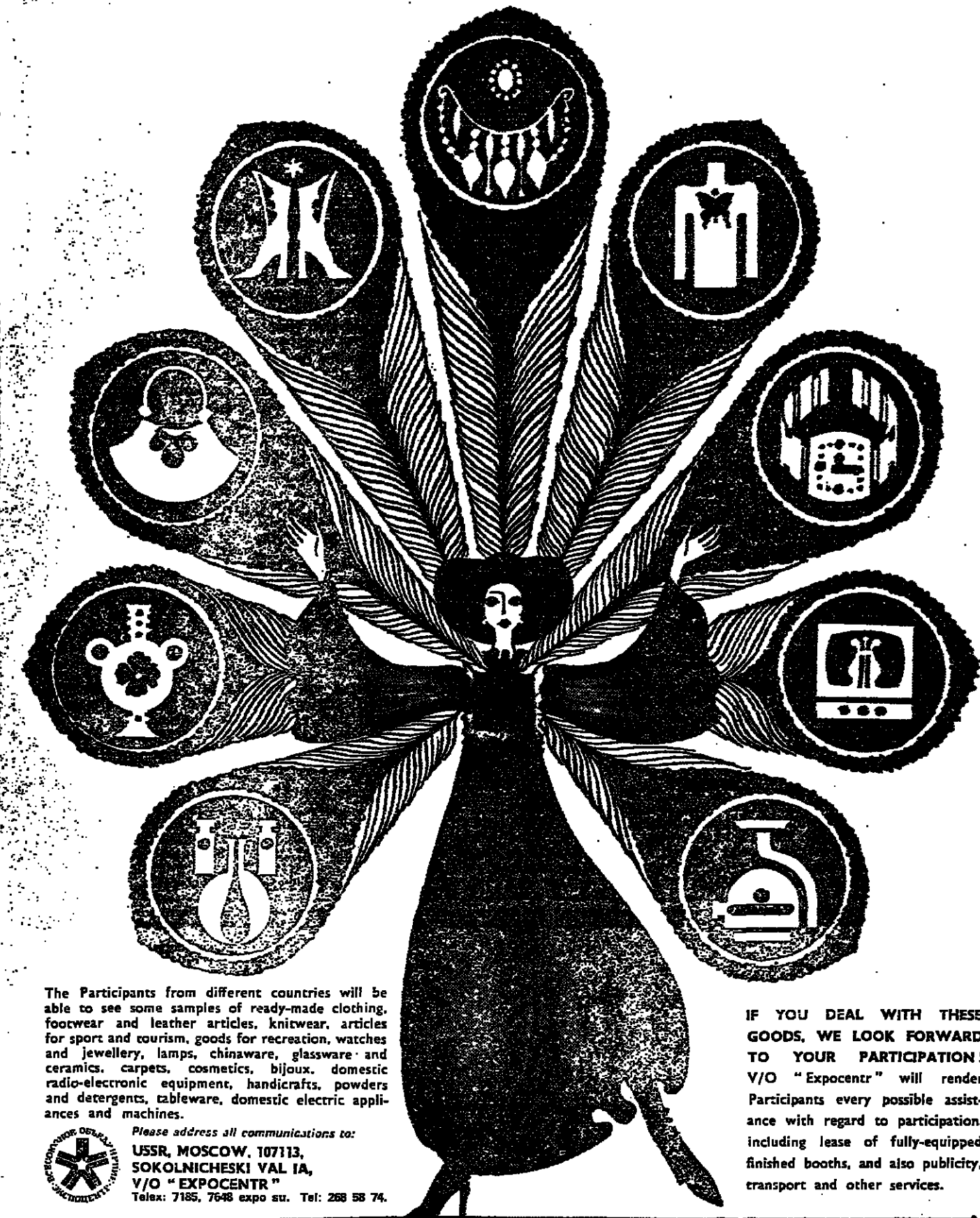
It is examining basic rates, overtime, holiday, shift and sick pay, productivity payments and the conditions to be met for productivity schemes, piecework, measured day work and other factors.

## Journalists told to quit rented flats

JOURNALISTS SACKED by the Nottingham Evening Post have been told to quit their rented homes within 28 days.

The Post sacked 28 National Union of Journalists members for taking part in the recent provincial journalists' strike and six of them live in flats rented from the company.

The ultimatum came in solicitors' letters on behalf of T. Bailey Foreman, owners of the Post.



The Participants from different countries will be able to see some samples of ready-made clothing, footwear and leather articles, knitwear, articles for sport and tourism, goods for recreation, watches and jewellery, lamps, chinaware, glassware and ceramics, carpets, cosmetics, bijoux, domestic radio-electronic equipment, handicrafts, powders and detergents, tableware, domestic electric appliances and machines.

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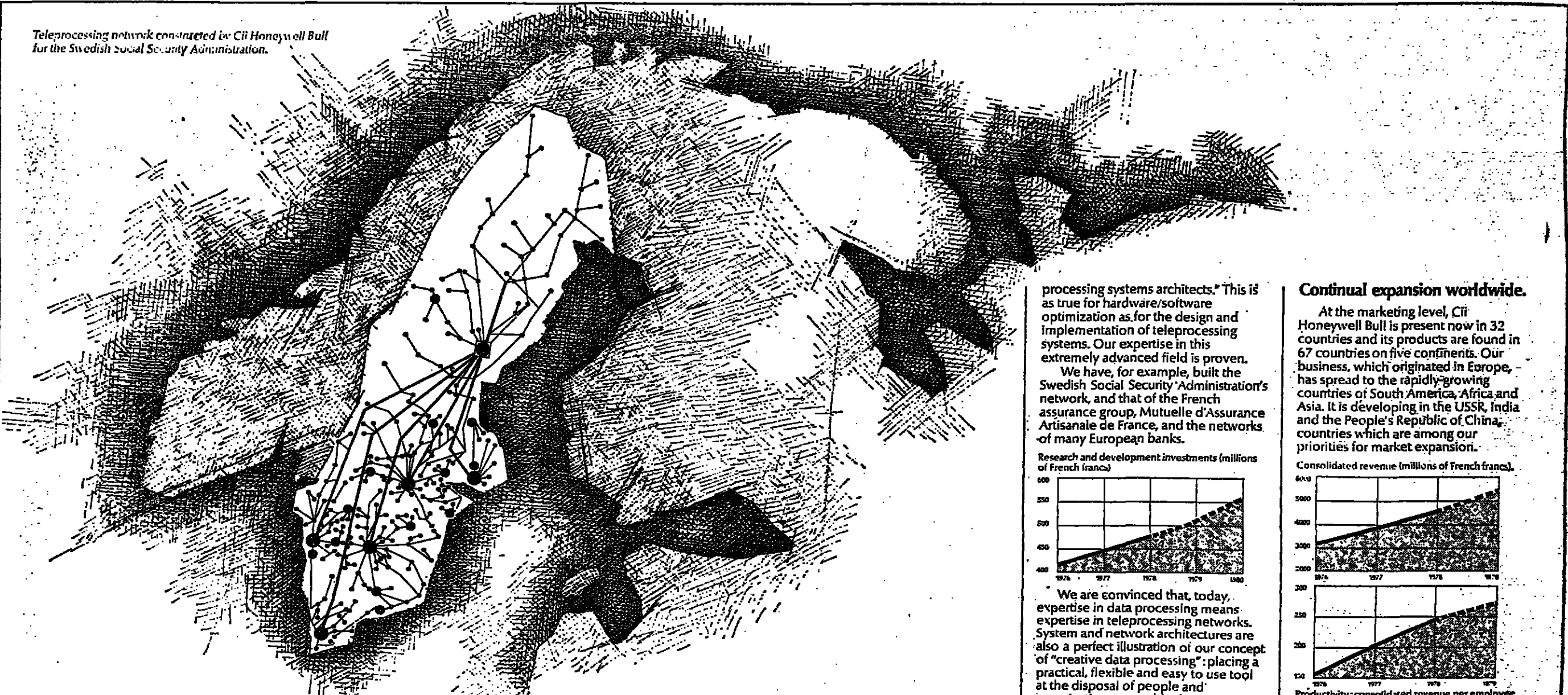
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USSR, Moscow

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Teleprocessing network constructed by Cii Honeywell Bull for the Swedish Social Security Administration.



## The future is data processing networks. We have experience of them.

We are seeing, and will continue to witness in coming years, the growing decentralization of data processing resources. This decentralized, distributed processing leads naturally to teleprocessing networks: the user, remote from the computer, gains access to the organization's data and its processing resources through increasingly varied and appropriate means.

### Three-way competence.

Teleprocessing networks represent one of the main axes of tomorrow's data processing. Their design and construction demand, as of now, expertise in three allied domains: advanced technologies, systems organization, and network architecture. At Cii Honeywell Bull we have

been orienting our research towards future network developments for a long time. We understood early on that it was necessary to explore all advanced technologies - the only possible way to stay in front of the international competition.

### Worldwide number 2 in data processing research.

By reason of the technical coordination agreements which link them, Cii Honeywell Bull and Honeywell Information Systems Inc. rank number 2 worldwide in data processing research. Each year we devote more than 10% of consolidated revenue to research and development. Each year we file about 150 patents. Today, Cii Honeywell Bull is a leader in

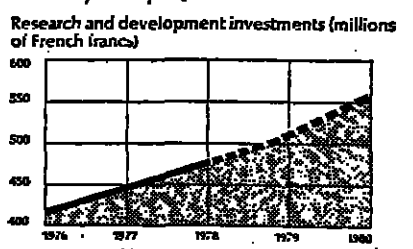
computer technologies. We have taken a considerable lead in the micro-electronic assembly technologies (micropackaging) which make it possible to fully exploit the advantages of highly-integrated circuits.

Half of our research investments are, in fact, devoted to the development of software. In consequence, Cii Honeywell Bull is able to offer operating systems which are perfectly adapted to the specific needs of users. We are developing highly-evolved languages of the SIL type (System Implementation Language), on behalf of the United States Department of Defense, for example.

### Systems architects.

We are, as J.P. Brulé, Chairman of Cii Honeywell Bull, recently said, "data

processing systems architects." This is as true for hardware/software optimization as for the design and implementation of teleprocessing systems. Our expertise in this extremely advanced field is proven. We have, for example, built the Swedish Social Security Administration's network, and that of the French assurance group, Mutuelle d'Assurance Artisanale de France, and the networks of many European banks.



We are convinced that, today, expertise in data processing means expertise in teleprocessing networks. System and network architectures are also a perfect illustration of our concept of "creative data processing": placing a practical, flexible and easy to use tool at the disposal of people and organizations to enable them to get the maximum benefits from their innovative and productive capacities.

### Our growth, in figures.

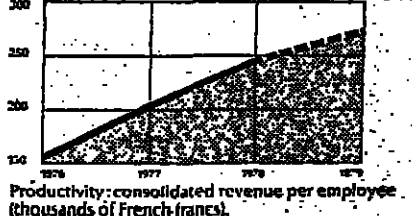
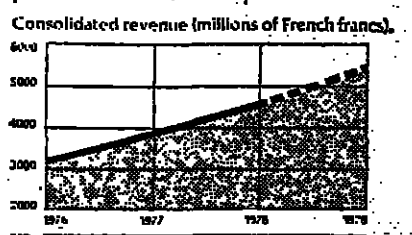
Cii Honeywell Bull's research and development policy, which guarantees its competitiveness in the international data processing market, has been rewarded by continued, balanced growth.

At the financial level, our consolidated revenue increases by an average of 15% a year. Fifty-three per cent of consolidated revenue is earned outside our headquarters country, France, clearly demonstrating our success in international markets - an index of competitiveness.

Our productivity per employee puts Cii Honeywell Bull in the first rank of data processing system manufacturers on a worldwide basis. Our net profit continues to grow, as does our cash flow (16.8% of consolidated revenue in 1976, 17.4% in 1977). And our debt/equity ratio of less than 1 (at the end of 1978) confirms the solidity of our balance sheet and provides us with the means for growth.

### Continual expansion worldwide.

At the marketing level, Cii Honeywell Bull is present now in 32 countries and its products are found in 67 countries on five continents. Our business, which originated in Europe, has spread to the rapidly-growing countries of South America, Africa and Asia. It is developing in the USSR, India and the People's Republic of China, countries which are among our priorities for market expansion.



Furthermore, our association with Honeywell Information Systems Inc. gives us access to the American market - the biggest and toughest in the world. The international success of our Level 64 systems is a significant case in point: out of nearly 1,500 orders for these systems to date, representing 18 million dollars in rental revenue per month - nearly a third came from the United States.

We have set ourselves the objective of being amongst the foremost worldwide in data processing by taking advantage of all the possibilities offered by a growing market. Ambitious, this may be; but it is also realistic. With its considerable financial, industrial and marketing resources, Cii Honeywell Bull has the means to do it.



Cii Honeywell Bull

Creative Data Processing







# Technical Page

EDITED BY ARTHUR BENNETT AND TED SCHOETERS

## ENERGY

### Doubles the power from the sun

FRUIT OF a student project at Reading University's Cybernetics Department, a simple way of extracting twice as much heat from a solar panel of given area could give this method of obtaining "free" energy from the environment an enormous filip.

In the design, which has won a £200 prize at the Energy Show at the NEC in Birmingham, the conventional flat solar collecting panel is mounted horizontally instead of being flush with the roof. Behind it and below it are two mirrors—simple sheets of aluminium foil.

The upper side of the plate is illuminated directly and by the beams reflected from the vertical mirror. The underside is illuminated by single- and double-reflected beams from horizontal and vertical planes.

Thus, the energy falling on the collector is almost three times as much as would strike a conventional unit of the same size, with the sun at its best angles during the summer.

Averaged over the period April to August, something like double the energy is available. It is suggested that the structure should be closed off by a sloping glass or plastic roof and that the collector plates themselves be enclosed in plastic sheeting to cut heat losses.

Commercial development is being considered by Solar Economy, Barksbury Hill, Upper Clatford, Andover, Hants. 0264 51592.

Further details on the project from Dr. G. R. Whitfield, Department of Cybernetics, University of Reading, 3 Earley Gate, Whiteknights, Reading RG6 2AL. 0734 85123.

## COMMUNICATIONS

### Projecting an image

IMAGES FROM 35-mm slide, 16mm cine and overhead projectors can be thrown at will on to a back projection screen, or a television monitor with video recorder can be brought into action in the Compak fabricated system from IMC Compak, 1 Rectory Road, Wokingham, Berks. RG11 1DJ (0734 790415).

Of interest to hotel groups, architects and company managements, the unit can occupy as little as 33 in of room depth in a width of 104 in and so can be economically mounted at the front of a conference room. No special construction work is needed and the system is free-standing.



Refitting poles to the rotor of a 456kVA, 450V 12 salient pole alternator from a 24,600 dwt French motor vessel after repair of the rotor and rewinding the stator at the Liverpool repair works of Deritend Electrical Services. The alternator, one of three of the

ship's main generators, failed in service due to fatigue of securing bolts to one pole. While the vessel continued to operate on reduced power, Deritend stripped, rewound and rebuilt the alternator which was subsequently reinstalled at a port of call.

## RESEARCH

### Close view of specimens

MELTING point determination apparatus of a new type has been built by the Platfilm Division of Rosemount Engineering Company of Bognor Regis. It allows direct observation of the specimen under test, and uses a 3-mm square platinum resistance thermometer element as a precisely controlled heater.

The melting head is set in a mounting base made of low thermal conductivity material shaped to enable the complete assembly to be mounted on the stage of a standard microscope. The small thermal mass of the heater enables it to reach the desired temperature very quickly, less than one minute being required to reach the maximum temperature of +300 deg. C. The cooling rate is of the same order.

Specimens which may be of

## PROCESSES

### Extraction of palm oil

AN INSTALLATION for the extraction of palm oil in both solid and liquid form by a new method has been developed by the food division of Koor Industries (Koor House, Shaul Hamelech St., Tel Aviv, Israel).

The first such plant is about to start production at Eilat and is to reach capacity output next month. This £1.1m plant will produce one-third of its output in solid form and two-thirds liquid. Hitherto, use of this relatively cheap oil, which in quality compares with olive oil, was limited by the fact that it could be turned into a liquid only at temperatures above 30 degrees Centigrade.

The Eilat plant will work both for export and to serve as a model for the sale of complete installations. Four foreign countries are already negotiating.

## MATERIALS

### Makes labelling easy

MULTI-PURPOSE industrial labelling system—Labelon Tape—from Bioscan has been developed as an improved alternative to embossing tapes. Labelon requires no machine or mechanical apparatus to create the label. The desired message can be permanently recorded with virtually any instrument—typewriter, ballpen or pencil. It can also be made with any handy pointed object.

Labelon can also be used to make an exact image of a raised message—a machine serial number—for example—by placing it over the message adhesive side down and rubbing the upper surface with any smooth instrument. Once written, the message is completely protected. The surface of the label can be wiped or rubbed without the characters being affected in any way.

## MAINTENANCE

### Sweeper dumps its load

A MECHANICAL floor sweeper which will discharge collected debris directly into refuse containers is now being marketed. The sweeper has a hydraulically controlled rear hopper which can be raised to discharge its contents at heights between 610 mm and 1,422 mm.

A fast rotating overthrow elevator propels the debris to the top and back of the 180-litre capacity hopper while a powerful vacuum sucks the dust laden air out of the broom chamber through a pack of 32 vertical filters. These are cleaned by an electrical shaker. The vacuum can be shut off for wet cleaning. The machine, called the FMC Wayne 60, has two side brooms and a main pick-up broom which work together sweeping a swath 1,397 mm wide. The maker claims a surface cleaning performance of up to 10,000 sq m per hour. A two-cylinder petrol engine powers the unit and one-pedal control gives the driver instant forward and reverse. The machine is marketed in the UK by Crosland Sweeper Sales, Hull, North Humberside. (0482 29072).

## IN THE OFFICE

### A clutch of copiers

CONSIDERABLE activity has been evident on the small office copier front in the last week with the introduction of compact low volume machines from Euro-Copy, Ofrex, Pitney Bowes and Rank Xerox.

The machine from Euro-Copy is the Mita Copystar with a maximum copying size of 1200 x 420 mm and a speed of five A2 copies per minute. It is a dry electrostatic type with automatic roll and manual sheet feeding, occupies a volume of 640 x 637 x 413 mm and weighs 135 kg. The company is at 1 Long Lane, London EC1A 9HA (01-606 5631).

Ofrex, Stephen Street, London W1A 1EA (01-636 3686) is offering the Rex-Rotary 5080 in which any plain paper between A5 and B4 in size and 65 to 130 gsm in weight can be used. First copy is produced in eight seconds, and subse-

quent copies are produced at 10 per minute. Images can be copied on to both sides of the paper and on to clear film. Dimensions are 370 x 480 x 840 the weight 60 kg.

Pitney Bowes is a new entrant to the UK market and will exploit its existing market base in mail room equipment, with direct sales and service. The machine is called the 458 and measures 450 x 520 x 320 mm. First copy comes in five seconds after which the production rate is 11 per minute. More on Harlow 26731.

The Rank Xerox machine, model 2202 has its own stand for supplying and is also a flat bed machine aimed at the relatively low volume user. Using dry toner it is able to print A4 copies at 10 per minute and B4 copies at five per minute. More from Bridge House, Oxford Road, Uxbridge UB8 1HS, Middx. (Uxbridge 51133.)

## ELECTRONICS

### New logic from Texas

SPEED, power consumption and other performance advantages are offered in a "third generation" of transistor-transistor logic introduced by Texas Instruments, Mantion Lane, Bedford MK41 7PA (0234 67466).

There are two new ranges of device, one concentrating on high speed (that is, the ability to handle digital data quickly), the other on low power consumption.

The first, designated SN74AS, is a Schottky design with switching speeds of 1.5 nanoseconds and a power of 22 milliwatts per gate. It is designed for application in mainframe, industrial and military data equipment where fast processing is important but power is not difficult to provide or dissipate. Compared with the company's previous devices, SN74AS has better ability to directly drive data bus lines as well as highly capacitive loads.

Depending on the function the circuits are performing, use

of the devices can result in printed board space savings of up to 50 per cent. They will be offered in 20 pin dual in-line packages only 300 mm wide.

A second series, SN74ALS, will be more applicable to micro or portable data systems the consumption being only one milliwatt per gate with a speed which is only slightly slower at four nanoseconds.

This is a particularly small speed-power product and has been achieved by the use of oxide sidewall isolation processing, shallower active junctions using ion implantation, and chip geometries which have an area only 65 per cent of the previous equivalent device.

These circuits will be available in 14, 16, 20 and 24 pin packages and will offer direct compatibility with large scale and most other standard TTL, allowing designers to improve system throughput and efficiency. SN74ALS is also expected to offer an alternative to standard CMOS circuits.

### Memory is increased

ABLE TO operate with the company's eight or 16 bit microprocessors, the IS8C64 read-only memory board from Intel Corporation (UK), 4 Between Towns, Cowley, Oxford OX4 3NB (0865 771431) is designed to meet most memory expansion requirements.

It has 16 sockets which provide a maximum of 64k bytes of non-volatile memory expansion, the actual capacity of the

board being determined by the type and quantity of the chips installed. These can be eight, 16 or 32 bit devices and, electrically programmable or ordinary ROM varieties can be mixed, although the same size must be used throughout.

The board operates with one of 15 switch selectable memory access times between 35 and 1550 nanoseconds, allowing it to be tailored to the performance of the installed components.

## SPECIAL ANNOUNCEMENT

# Mails and Telegrams services to the Republic of Ireland.

The Post Office regrets to announce that because of industrial action by postal staff in the Republic of Ireland, all postal services to and from the Republic of Ireland are suspended until further notice, and telegrams will be subject to indefinite delay.

### Postal Services

No packets, parcels or registered letters can be accepted in post offices. Please do not post mail to the Republic of Ireland in letterboxes.

### Telegrams

Telegrams to the Republic of Ireland accepted in post offices or by telephone will be subject to indefinite delay.

Whilst every attempt is being made to deliver mail posted to the Republic of Ireland during the past few days, there will regrettably be delays in clearing the backlog of mail.

A further announcement will be made as soon as normal postal and telegram services to and from the Republic of Ireland are resumed.

## The Post Office

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<b>STRIP FLATTEN AND CUT-TO-LENGTH LINE</b> by A.R.M. Max. capacity 750 mm x 3 mm.	0902 42541/2/3 Telex 336414
<b>FARMER NORTON 18in WIDE CUT-TO-LENGTH LINE.</b> Max. capacity 15in x 10 s.w.g.	0902 42541/2/3 Telex 336414
<b>RWF TWIN-STAND WIRE FLATTENING AND STRIP ROLLING LINE.</b> 10in x 8in rolls x 75 hp per roll stand. Complete with edging rolls, turk'n head, flaking and fixed recoller, air gauging, etc. Variable line speed, 0/750 ft/min and 0/1,500 ft/min.	0902 42541/2/3 Telex 336414
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<b>24in DIAMETER HORIZONTAL BULL BLOCK</b> by Farmer Norton.	0902 42541/2/3 Telex 336414
<b>PACEMAKER SIX BLOCK (22in x 25 h.p.)</b> variable speed Wire Drawing Machine by Marshall Richards.	0902 42541/2/3 Telex 336414
<b>2 15 Die MSA WIRE DRAWING MACHINES,</b> 5,000 ft/min with spoolers by Marshall Richards.	0902 42541/2/3 Telex 336414
<b>9 DIE 1,750 ft/min SLIP TYPE ROD DRAWING MACHINE</b> equipped with 2 speed 200 h.p. drive 20in. Horizontal Draw Blocks 22in Vertical Collecting Block and 1,000 lb Spooler. (Max. inlet 9 mm finishing down to 1.6 mm copper and aluminium).	0902 42541/2/3 Telex 336414
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# THE MANAGEMENT PAGE

EDITED BY CHRISTOPHER LORENZ

ONE OF the more lasting effects of last year's political pact between the Labour Government and Liberal MPs is the gradual spread of the employee share ownership form of profit sharing in various parts of British industry and commerce. This is because the pact led the Government to include income tax concessions for employee share ownership in last year's Finance Act.

The official starting date for the concessions is now less than two months away and a significant number of companies have developed schemes. The Inland Revenue, which has set up a special unit to vet schemes, has about 60 passing through its hands, half of which are new arrangements and half are adaptations of old schemes. The companies involved range from ICI and British Sugar Corporation to Lloyds Bank, Foster Clothing and the House of Fraser. Several of them have been given draft approval by the Inland Revenue. Employees in all these companies will now be eligible for an allocation of shares which will then qualify for increasing reductions in income tax depending on how long they are held.

The Finance Act's arrangements cover share handouts of up to £500 a year per employee in schemes which are open to all employees. The shares are bought and held by trustees (in the case of ICI's scheme there are four employee and four management trustees). In general, 50 per cent of the tax is waived after five years and 75 per cent after seven years. No income tax is due after ten years.

Many people assumed, when these arrangements were passing through Parliament, that they would lead to a fairly simple form of application in companies which would either decide to adopt or to ignore the concessions. However, it is already clear that this was incorrect and that there will be a wide variety of applications.

Companies like ICI, for example, are adapting existing share schemes, while others, such as Lloyds Bank, are adapting mixed share and cash hand-

outs. Others, such as Foster Brothers, are fashioning schemes to operate as self-financing productivity schemes.

## John Elliott looks at the likely impact of the introduction of tax concessions on shares for employees

# Swelling tide of employee share schemes

The British Sugar Corporation is one company that is simply setting up a scheme to accommodate the personal savings of employees and is not making a direct contribution itself.

Up till now such forms of share ownership have played only a small part in British employee participation policies and, apart from one or two notable exceptions like ICI, there have been few if any at the heavy manufacturing end of British industry or in companies that are strongly unionised. Trade unions have traditionally regarded such schemes with a mixture of disinterest and opposition because they are primarily interested in increasing their members' influence and wealth in other ways.

But the new tax changes have caught a tide that was beginning to swell in 1976 and 1977 as employers, faced with TUC demands for industrial democracy innovations like the Bullock Report's worker directors, began to look for "softer" forms of participation that might also increase the economic understanding of employees.

Few companies, however, believe that share ownership can form a primary method of employee involvement, although finance directors are often more interested than personnel experts in the notion. This is partly because the money spent by the company buying the shares returns to the company immediately as investment which qualifies for corporation tax relief. And, if the shares are held under the new Finance Act arrangements, the investment is effectively guaranteed

to the company for at least five years.

ICI's scheme is one of the oldest in the UK. It was introduced in 1953 and was partly responsible for giving such arrangements a bad name. This is because, at the beginning, workers sold their newly-received shares as they passed through their factory gates on the way home. For the past seven or eight years ICI has estimated that about 40 per cent of its 85,000 qualifying employees have kept their shares while the rest have sold them more or less immediately.

Following modifications introduced at ICI last year, the amount of money allocated is related to a value added assessment of the company's profits. Before last year the sum was fixed unilaterally by management. The average handout last year was £325 gross, or £206 after the income tax that then had to be paid. This meant that a middle manager on say £10,000 a year received £170 gross while a £2,000 a year manual worker received £142. The total gross bonus was £27.3m of which nearly £10m went in income tax.

Now the scheme has been changed so that employees can choose each year whether to opt for these old style taxed shares which are immediately saleable, or for up to £500 of the allocation to be in new-style shares which would remain with the scheme's trustees for at least the five-year qualifying period. Higher paid people will be able to take their allocation in excess of £500 in the old-style taxable shares and other employees who do not want their money locked up for the five years may also opt out of the new scheme.

Another concern adapting its earlier arrangements is Lloyds

Bank which introduced a mixed cash handout and share scheme a year ago for those of its 42,000 employees with more than five years service. Employees in the bank's bottom three pay grades who earn up to about £4,400 a year were given a cash handout while those above received shares which of course had to be taxed. This scheme would not pass Inland Revenue scrutiny for the new tax concessions because one of the Finance Act's rules, which was included to remove any class divisions in a scheme, says that the arrangements must be open to every employee with a certain length of service in a company. So Lloyds has adapted its arrangements which went to an emergency annual meeting for approval on February 15.

In future the people in the bottom three pay grades will have an option of either taking cash or shares. Those above can choose whether to take old style taxable shares, which can be sold quickly, or the new style which have to be held by the trustees for five years.

Yet another sort of scheme has been introduced by Foster Brothers Clothing for its 4,000 employees in shops, warehouses and factories. This scheme was being designed before the Finance Act concessions were introduced because the company wanted to start a company-wide productivity scheme in an attempt both to give a day-to-day shop or factory floor incentive and to provide some unifying force covering the whole company.

When the Finance Act emerged, the scheme was redesigned. But it still retains a large, taxable, cash element. This has been done by giving the employees a choice of taking their bonus totally in cash, totally in shares, or half in cash and half in shares. The



company's management believes that the availability of cash will help boost the day-to-day productivity aspect of the scheme while the share ownership option will help to unify the company. It is expected that about 85 per cent of the employees will take cash in the first allocation for the year ending this month.

The size of the overall bonus is calculated according to a formula embracing a value-added assessment of productivity, the company's profit, and its employee costs. The cost of the shares is geared to the company's share quotation price on the five business days immediately after the announcement of its annual results. The management expect that the bonus for the first year will add 6 per cent to basic pay—which will for example mean a £134 handout to a person on a basic weekly rate of £43. Since Foster has a lot of part-

time workers, it has opened its scheme to all full-timers and part-timers doing 16 or more hours a week who have worked for the company for a full year. Part-timers working eight to 15 hours weekly qualify after they have been employed for five years. The company has also built a sanction against taking industrial action into the scheme which was discussed with employee representatives but was not formally put through union negotiating or consultative machinery. This sanction is that "employees who take industrial action which could have an adverse effect on the profits of the group should forgo their profit share for the period concerned."

Because of its cash element, this Foster scheme has had to be vetted by the Department of Employment's incomes policy division to ensure it qualifies as a self-financing productivity deal, and the company intends

to keep the arrangements, it has agreed even though the pay policy is currently breaking down. There are two main exemptions to the official pay limits. The first is that all schemes which only provide shares in line with the Finance Act tax concessions are exempt from the pay limits. Second, schemes such as ICI's which include other share and cash options that were introduced before the current phases of pay policy began are also exempt (in the same way as extra payments based on ordinary old bonus schemes are also allowed in excess of the pay limit). But new schemes, like Foster's, which have either cash or elements which include other forms of shares, must satisfy the Government's criteria on self-financing productivity schemes.

While schemes like Foster's ICI's and Lloyds Bank's provide choices for their employees,

some companies are designing or adapting schemes which do not include a cash alternative.

For example both the House of Fraser and Galtner have schemes whereby employees are issued with an allocation of shares. This type of scheme appeals to some companies like the House of Fraser, where operations are scattered around the country and where some subsidiaries (like Harrods in the Fraser case) may have their own cash incentive schemes which will continue to operate independently. This means that the employee takes the group-level share or forgoes his bonus. But the advantage for the company is that it is not required to pay out cash as an alternative and so can reinvest the whole of the profit share in its business and obtain corporation tax relief.

Yet another type of scheme is a savings plan which is popular in the US, where profit-sharing schemes are often linked with pension arrangements. This type of scheme also appeals to more paternalistic managers which feel that employees should make a direct contribution to the cost of the shares. The basis of the scheme, which is being considered by some UK companies, is that a deduction is made from employees' wage packets to pay for shares. The company then tops this up with an allocation from profits.

But, while the company contribution will qualify for the Finance Act's tax concessions, there is no similar tax relief for employees' savings which come out of taxable pay.

So it can be seen that a wide variety of schemes are being introduced to meet the different traditions, management styles, financial needs, and bonus arrangements of different companies. It is of course too early to suggest that the tax changes are going to make employee share ownership widely popular in the UK. But what is already clear is that the tax changes have helped to start a new trend in profit sharing.

SHOULD Europeans and Americans who visit or work in the Arab world bother to learn Arabic?

Obviously there are some people — diplomats and commercial bank managers, for example — who have to be fully aware of what is going on around them, and need to speak and read Arabic fluently to do their job.

But most businessmen and other people visiting or even based in the Arab world can present a reasonable argument for not learning it. The Arabs with whom they are likely to deal speak good English. Arabic is a difficult tongue for Europeans to learn and it takes a long time to gain sufficient fluency to do business in it (British diplomats spend a solid

## Should you learn to speak Arabic?

16 months at their special school, and even then few are said to be totally fluent in it). And few businessmen are likely to be involved in the Arab world long enough to justify investing so much time in the language.

But having visited Arab countries for two or three months each year for the past few years for the Financial Times, I felt increasingly foolish knowing almost no words of Arabic. I occasionally used Arabic phrases without knowing what the words meant individually or how they should be pronounced, and felt frustrated at not being able to explain anything fairly complex to a taxi driver or make a simple request to a non-English speaker on the telephone. Phrasebooks and self-teaching Arabic books did not

seem to help.

I wanted a course that taught the rudiments of colloquial Arabic explained the basic grammar, taught a vocabulary and supplied a teacher whom one could question till one understood. My aim was to be able to hold simple conversations with Arabs who did not speak English, and at least to be able to handle some Arabic greetings and polite conversational phrases with senior people with whom I was going to talk seriously in English. For one is assured, Arabs are disproportionately pleased to find a European who even attempts to speak the language. The grammatical base would, I hoped, enable me to build on what I had learnt.

So I enrolled on what was in effect a five-day "immersion

course, run three or four times a year for £190 by the School of Oriental and African Studies in London. The advance instructions said dauntingly that no English would be used in introductory new material, that lessons would continue late into the night (the course was residential) and that I was to bring a tape recorder with which to listen to cassettes of what I should have learnt, after lights out, so to speak.

The fact that the course was intensive rather than relaxed, since I knew that owing to the rather unpredictable nature of my work I stood little chance of attending regular weekly lessons.

There were two classes of 12 people, composed predominantly of sales managers with a

sprinkling of bankers and consultants. The teacher of our class was an Egyptian scientist working in Britain, who had eloquent mannerisms and a superb gift for acting. This was useful as the basic teaching method was to engrain phrases and words on one's brain by demonstration, gesture and repetition. Endlessly we rehearsed with the teacher, or each other, haggling with taxi drivers and berating the hotel clerk who has lost one's reservation.

En route we learnt some simple grammar, while pronunciation was polished up in the language laboratory. Over the five days we had explained to us the vocabulary for a whole range of situations, from making an appointment on the

telephone to handling a crude "Who are you, where do you live and what do you do" conversation. In all we could have learnt about 500 words.

I came away reeling, with phrases and the gestures associated with them, racing through my mind, overwhelmed by the amount of material thrown at me and clutching two cassettes and a notebook of all I should have learnt.

A fortnight later I went on a two week trip to Kuwait. I don't consider myself by nature a brilliant linguist; I tend to be rather bashful and have found as I did on the course, that one needs lots of practice before the right Arabic word leaps from brain to tongue the moment it is needed.

But I have also had some satisfaction from directing taxi drivers to places I would otherwise have had difficulty getting them to go, and from occasion-

ally being able to get the drift of simple Arabic conversations going on around me.

The problem is that if one only pays short visits to the Arab world and spends a lot of time with English-speaking people, one may not get sufficient practice to advance very far, without a great effort. I cannot read Arabic simply or understand classical Arabic, the form in which speeches are usually made and books and official publications written. (The next stage, however, would be the SOAS intensive course in classical Arabic.) But I already feel less of an alien in an Arab country and that alone is worth something.

Details of the course referred to from: Extramural Division School of Oriental and African Studies, Malet Street, London, W.C.2.

James Buxton

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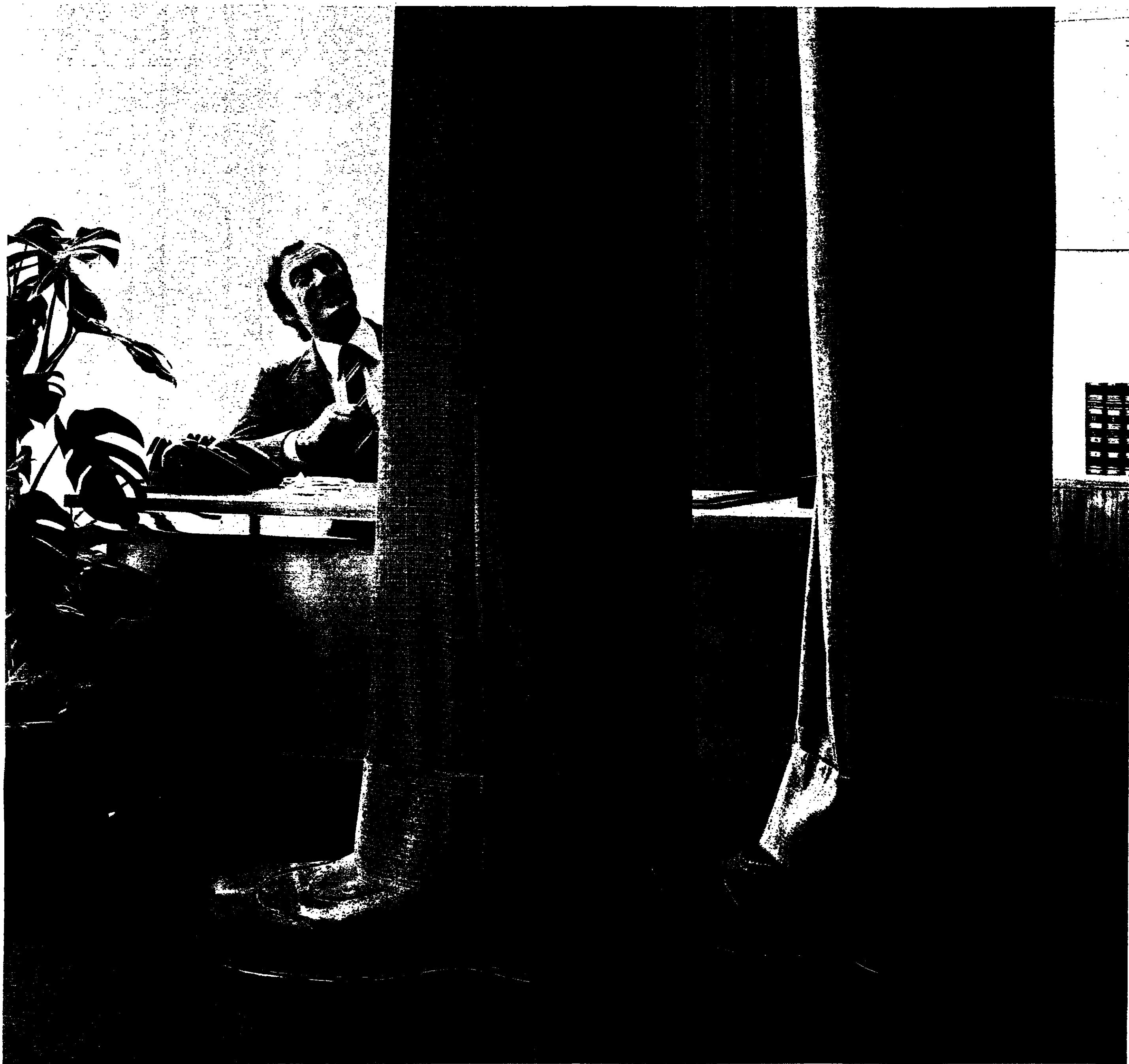
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THE ARTS

St. John's, Smith Square

Operatic Shakespeare

by NICHOLAS KENYON

A not altogether appropriate title for Asa Nova's fascinating concert on Saturday: we heard little that was operatic and less that was Shakespeare. "From dear Shakespeare's honoured dust" (as Dryden's Prologue to *The Tempest* put it) Restoration dramatists conjured up quite a ferrago of entertainment; in particular, those plays which provided the best excuse for masques and other music were generously provided with such interpolations.

This concert presented three Shakespearean musicks for the stage (plus one oddity for the home): Locke's marvellously original *Tempest* interludes (given a rather lack-lustre performance); John Eccles' music for the witches in *Macbeth* (a first modern performance) and the *Tempest* music attributed to Purcell. But actually by his contemporary John Weldon, it now appears—which leaves a little musicalological egg on the face of the scholar who called it Purcell's "most mature work for the theatre."

In fact Weldon's reputation deserves to be—and used to be—much higher. Sir John Hawkins mentioned him in the same breath as Purcell for "sweetness of melody," and indeed it was melody which stood out in this performance, which one heard with new ears: the endless, florid tunes for Ariel (especially "Dry those

eyes," sung with deceptive ease by Judith Nelson) and the noble declamations for Neptune (David Thomas, intense yet lyrical).

By contrast, Eccles' *Macbeth* music was more curious than memorable: a Symphony involving the sinister tones of the serpent (Andrew van der Beek) and some lively witches choruses which out-Dido Purcell are what most impressed (Cathedral Music, 36 Ranelagh Gardens, London W6, have published Grahame O'Reilly's new edition at £1.64—a bargain). The extra oddity was the setting of Esau's "To be or not to be" found in Pepys' diary, composed by...? It's a foolish little recitative; however nicely sung by Richard Morton; the accompaniment was revised and played by Tim Crawford—the effect of the whole was resolutely un-tragic.

*Asa Nova* (led by Roy Goodman) played with more spirit than sophistication, while the singers, Cora Cappella, sang vice versa. It was good to have a firm conductor in charge of such an occasion: Graham Barber was elegant and effective. On the sidelines, Petrick Edwards and Peter Milne provided a two-man RSC, condensing plots and swooning with great virtuosity; but Mr. Edwards' screaming wits' curses in a half-empty St. John's is not my idea of fun or Shakespeare. Musically, a rewarding evening.



Shope Shodeinde and Malcolm Fredericks

Bush

Independence by B. A. YOUNG

Once upon a time there were two West Indians who lived in a newly independent Caribbean island... Mustapha Matura has really written a folk-tale, with his old barman Drakes who loved the bygone colonial days and ends as a night-watchman and his young waiter who thought they were slavery and ends as a prosperous farmer. The moral is not quite as clear as this might suggest, though. Colonial life may have been slavery, but life under the new government is slavery too (the waiter is only a waiter because the Department put you here, and here you have to stay), and slavery under a regime that is corrupt and inefficient.

Allen, the waiter (Malcolm Fredericks), feels that if he only had \$1,000 he could start farming. In an episode where Mr. Matura knocks the square peg of probability hard into the round hole of his plot, a former Governor of the island pays a farewell visit to the hotel, now

a state leisure centre, where Drakes and Allen work. The Governor's lady had to leave the island rather fast because she was involved with a black waiter, who was subsequently charged with having assaulted her and hanged himself. She has so implacable a conscience that now when Allen serves her a drink, she tips him \$1,000.

Drakes (the imitable Stefan Kalipha) has a row with the Head of the Department, a black Jimmiller named Harper (Ewart James Walters), when he defends Allen for walking out of his job. When it is made clear to him that the state has nothing better for him than manual labour he burns the hotel down with, appropriately, a couple of Molotov cocktails. Here the play finishes, having indeed taken two acts to encompass what is really a serviceable one-act plot; but Mr. Matura then adds an appendix in which Allen brings his girl (Shope Shodeinde) to see where he once worked, and another political argument be-

gins, only this time with both parties on different parts of the independent side.

The scenes between Stefan Kalipha and Malcolm Fredericks are enjoyable, not only for the pleasant acting of them both but for the lively and expert way Mr. Matura has with West Indian speech. Mr. Walters brings the necessary blend of authority and inexperience to the part of Harper, who I hope is not characteristic of the New Caribbean. Michael Howard and Mary Jones can't do much with the two relics of colonialism, for their dialogue, required to bring up some convenient facts at a rather unlikely moment, is fatally unconvincing, though the idiom is apt enough.

The direction by Roland Rees for Foco Novo is as good as usual, and there is a pretty set designed by Adrian Vaux. Something should be done about the smoke-filled break in the second act where the stage is set for the short and not very interesting final scene.

Festival Hall

Curzon and Slatkin

by DOMINIC GILL

The Royal Philharmonic Orchestra's concert under the baton of Leonard Slatkin (who is Music Director of the St. Louis Symphony and the New Orleans Philharmonic) began rather glumly on Thursday with a routine account as curtain-raiser of Beethoven's Prometheus overture, and a decidedly undernourished performance from the orchestral point of view of Mozart's D major piano concerto K537.

The sound of the ensemble itself was undistinguished: it is rare indeed to hear the violin line of the concerto's first tutti so vigorously upbraided. Pale contrast to the soloist Clifford Curzon's live and supple shaping of the same movement—in the early pages there were some finger fuffe, but nerves soon settled. His larghetto, prettily elaborated and ornamented, sustained a line of marvellous purity and simplicity—simple never, but that simplicity which conceals the greatest art. His finale was a study in contrasting textures, light and feathery, crisp and bright. Slatkin explored none of Curzon's more delicate paths: the sad sideways slip into the minor key; the sudden quick-

silver emphasis or shy rubato glances. After such inert orchestral Mozart playing, it was a surprise, and greatly welcome, to discover a fine-grained and vivid account in the concert's second half of Rakhmaninov's first symphony. Slatkin came suddenly to life, and took his players with him—the first movement was splendid, every bright, brassy light, and every dying surge, powerfully con-

tained. The colours he drew from the scherzo, veiled and threatening, were very fine; there may be darker currents of yearning, and darker sorrow too, than he found in the slow movement—but its climax was glorious, clear and broad. The big, piecemeal finale worked up an impressive momentum: real conviction here at last, jubilant in the huge final conversation between strings and brass.

New members for literature advisory panel

The Arts Council has appointed four new members to its literature advisory panel. They are: Robert Gavron, a director of a printing firm; Elizabeth Jane Howard, the novelist; Miles Huddleston, a publisher and director of Constable and Co.; Dr. Graham Nicholls, curator of the Johnson Birthplace Museum and literary secretary of the Johnson Society; and John Whitley, literary editor of the Sunday Times.

The Susan Smith Blackburn Prize

The first annual Susan Smith Blackburn Prize has been awarded in London to Mary O'Malley for her play *Once a Catholic*. This new literary prize of £1,000 (\$2,000) goes annually to a woman who deserves recognition for having written a work of outstanding quality for the English-speaking theatre. The prize reflects the values and interests of Susan Smith Blackburn, an American actress and writer who lived in London the last 15 years of her life. She died a year ago, aged 42.

American radio

Disco dominates the air waves

by FRANK LIPSUIS

What attaché cases are to one segment of New York society large transistor-cassette machines are to another—notably the young people who comprise the messenger and itinerant set, walking the streets and blasting disco music. Their disco cassettes also serenaded underground passengers till the beginning of this year when a city ordinance put an end to this form of noise pollution.

If this source of spreading the disco phenomenon has been eliminated, another quickly took its place with the change in format of WKUT, a former mellow-sounding radio station that changed to disco—and gave the sound a shot in the arm comparable to the impact of the film, *Saturday Night Fever*. From rather mediocre ratings, the station became the most listened-to in New York almost overnight. The development impressed radio people not only for the new audiences but also for the speed with which they found the station. There was no doubt that this was an idea whose time had come.

Within a month, over a hundred stations around the country had imitated WKUT; at the same time, the NBC network announced it was hiring the services of the programming advisors to WKUT, without directly saying it would adopt the disco format. In extensive Press coverage of WKUT's success, station officials described their apprehensions in making the change from a profitable, though un-spectacular mode to the untried, persistent bongo beat of disco. The real surprise is the time it has taken for someone to take the plunge after disco has translated well to nightclubs, films and records.

The delay, I suspect, reflects the same reluctance the record business has had to embrace disco. Though some companies, like TK (KC and the Sunshine Band), RSO (the Bee Gees) and Casablanca (Donna Summer and the Village People), quickly latched on to disco and did extremely well with it, most of the record business preferred to promote "punk" music to its overpublicised and embarrassing demise in America.

The record companies did not just guess wrong. They wanted to see "punk" music succeed more than disco. CBS already

had a number of punk groups available to them in the United States through their British company, Warner Bros, caught up by making a deal to distribute Sire Records, which had the Talking Heads, the Ramones and other domestic American "punk" bands. Had "punk" turned out to be what disco has become, the two major American labels would have dominated the record business.

Disco does not lend itself to such monopolistic control. Like black rhythm and blues before it, it is the sound of the streets, and though records have to be promoted more than ever before, any disco song can catch on with the right sound. Names are less important than danceability; hype is less important than pep.

Discotheques are not particularly popular among record companies for other reasons, too. Their disc jockeys are known to splice tapes, adding bongos and other instruments to make the songs longer and more danceable. Records are hardly ever identified and so playing them is useless for encouraging sales. Besides, promotion people, used to the routine of radio stations, find discotheques a chaotic market where it would be easy to give away more records than their efforts could sell. And, unlike Europe, public performance in American clubs provides very little in the way of royalties and therefore very little inducement to garner air-play.

The real question is whether American radio will ever be the same again. For the past 20 years, the most popular station in any given area was the pop music station. It might not have been the most dignified or enlightening programme to listen to, but it was unique. It had its fast-talking, excited imitators in the off-shore pirate stations that forced the hand of the Government to allow commercial stations into Britain.

Their uniqueness lies in the breadth of sounds they encompass in one format. If people out there in radio-land buy Barbra Streisand and the Village People, then the station will play both. For the past 20 years there has been a symbiotic relationship between radio and record sales. The radio would not play outlandish

music; so such records were toned down or not produced. Still, the spectrum of sound in outlandish records was measured this way. If all records end up being measured, percussion will ride the air waves as brass and strings once did.

It seems hardly likely that any given area could support more than one disco station since they would all end up sounding exactly alike. One disco station may beat out each pop music station, but the numbers listening to pop on all stations playing it far outweigh the numbers listening to the one disco station in town. On the other hand, before WKUT most people thought the average tolerance level for disco music would be fulfilled by a Bee Gees record played every half hour.

Except for the top 40 stations, the rock stations have avoided disco music altogether. Progressive radio in particular—that *underground* of the 1960s—has found disco anathema and described it in terms as harsh as "fascistic." They think it lacks the individuality of the progressive heroes like Bob Dylan, the tradition of folk music, and the prettiness of a lot of the female singers. Progressive stations did pick up on "punk" music and their eagerness to play it misled record companies into thinking they had found the new sound of the 1980s.

In a head-on clash, it is hard to tell what music will win. Progressive stations taken together have more listeners than disco, but the wave of the future may sweep over the ageing defenders of the past. The battle seems to line up with the upper and lower classes listening to their disco music in fancy clubs and the street while the middle classes defend rock 'n' roll and their now dated progressive music in the warmth of their "dens" listening as their component speakers fill their lives with "meaningful" sound.



The Bee Gees

Wigmore Hall

Music at Court

by NICHOLAS KENYON

The Academy of Ancient Music is the latest ensemble to set off on the nationwide Early Music Network, and on Thursday they launched their tour with a respectable, if uninspiring, Wigmore Hall concert. Economics do not allow the full-scale orchestral Academy to tour; this is a small chamber group of four plus the counter-tenor James Bowman. Programmes have been designed to be flexible, so different four venues may hear new items.

The concert's title was that of Christopher Hogwood's recent handsome and informative book for the Folio Society, and of the Academy's companion records—a useful holdall formula, since it permits virtually any music composed under court patronage to find a place. Here we heard Italian music by Monteverdi, Uccellini, and an attractive, darkly coloured cantata by Alessandro

Scarlatti, "Infermata, vulnerata," a group of pieces by Purcell, culminating in the vivid Chacony triptych which has become the Academy's favourite; a scrap of Bach, and Couperin's *Apothéose*.

The whole was elegantly united by Hogwood's introductions, yet there was more than a feeling that a routine was being observed rather than music brought to life. Monica Huggett and Polly Waterfield dined with sprightly grace in the Purcell but the Couperin demanded a sophistication of articulation and ornament which eluded them. Huggett's Bach sonata movement was curiously inconsequential; it would have been good to hear some solo work from the gambist, James Ryan. It was a harmless evening, professionally performed; but the regions deserve livelier fare.

Rare play at the Royal Court

As part of the policy to revive neglected plays as well as to present new ones, the Royal Court will present *The London Cuckolds* by Edward Ravenscroft (1644-1704) opening on February 27.

The play was written in 1681 and was by far the most popular of the twelve plays written by this lawyer-turned-playwright. Dealing as it does with aldermen of the City of London trying to escape the web of sexual intrigue woven by their wives, the play was a great success with the female citizens and Charles II and his court.

The production will be in the hands of Stuart Burge, the

Royal Court's artistic director, and will be designed by Robin Archer.

Among the cast are Stephanie Beacham, Kenneth Cranham, Alan Dobie, Barry Stanton and James Saxon.

Rossiter Hitch

Owing to influenza, Leonard Rossiter was unable to commence rehearsals as scheduled for *Semi-Detached* at the Greenwich Theatre, which was due to open on February 22. The production of David Turner's comedy, in which Leonard Rossiter returns to Greenwich in a role he created at Coventry in 1982, will now open on February 28 at 7 p.m.

RUGBY BY PETER ROBBINS

Has J P R Williams had his day?

WALENS AND FRANCE have donated the home rugby scene for so long that the match between them almost invariably settles the championship. Judged by the standards reached in the game in Paris both sides are still ahead of the other countries, although Wales more certainly are showing signs of the need for change.

France won narrowly, 14-13, a score that in no way mirrors the appreciable gap in attacking virtues. France could have won by a lot more had they taken the chances they created so cleverly, whereas Wales never really looked as though they would score anything but a scrumbled try.

However, it was the finest match we have seen anywhere for a long time because it was full of venture and there was tremendous courage from both teams. Above all it was a game of dazzling speed, and in that particular aspect lay the main difference between the teams.

France had to make the same mobile, against such a cerebral collection as Price, Windsor and Faulkner. Yet they also had to be unflinching in the forward exchanges, which reached a new intensity. France kept on their pace and did not shrink the forward commitment.

Rives is a comparative newcomer to captaincy, but his fanatical drive set the example for the rest, who followed obediently and sacrificially. If

ever one man influenced the course of the game it was he. He first destroyed Welsh movements and then created innumerable opportunities for his side. Joinel, also, had a marvellous game.

But it was the collective speed to the breakdown and the exemplary setting up of the ruck that gave France so many options.

Paparemborde and Rives stood away from the line-out to make the first breach. Vaquerin also punched through. But whoever it was there was a blue tide in their wake.

Ploys

There were few chain movements by the forwards, but France's excellent regrouping inevitably brought in the Welsh back row.

To counter Martin, Clegg and Quinlan, France had a variety of ploys at the line-out, but because they tapped poorly they largely negated their originality. They had a hard time of it at the set, where Price frequently collapsed the scrum with impunity, and France also had difficulty in controlling the channelling of the ball, so that Gallion was caught several times by Holmes.

Fur all that Gallion was able to play with influence and variety. The same was true of Aguirre, who is now the finest full-back in the world. His line

kicking was long and accurate, but it was his making of the extra man in the quick three-quarter movements that gave France's attacks such piquancy.

Noves, France's left wing, also disconcerted Wales with some twisting counter-attacks, but the game was not won solely by attack.

Ruthless French tactics completely eliminated Wales' strongest asset, their counter-attack from broken play. Whenever a Welsh player went forward there was a blanket defence to make the tackle. This numerical advantage was essential to France's hopes.

The French did not have it all their own way, and they were never able to build up a substantial lead.

Wales forward discipline helped them to survive the onslaught of the first 20 minutes, but one had the distinct impression that they were playing on borrowed time. Wheel was missed for his strength in the mauls, but Martin almost compensated for his absence with a truly magnificent display.

Squire and Ringer both got through a tremendous amount of defensive work, but none of the Welsh back row had the time to involve themselves in the Welsh attacks.

For once the Welsh forwards were on the receiving end, and so the pattern of the team's normal play was utterly disrupted. What should have been

a preparatory phase, in fact became a perpetual rear-guard action.

Sad for J.J.?

Even the Welsh tactic of wheeling the scrum to get at Gallion finally came unstuck. The Welsh forwards had all the right reflexes but as a unit they were that much slower.

Holmes, therefore, did not have the options that Gallion did. He made the best use of what he had. Arguments were raging late into the night about Holme's pass, and, true, it is a little slow. It is, also, long.

But not many scrum-halves could have taken the battering that Holmes did against the big French forwards and still bounced back. His was a game of outstanding courage.

Nor is their Welsh concern at fly-half, where Davies kicked well except for the restarts.

The main worry must be, first, in the inability of the Welsh backs to attack at speed, and secondly, in the wayward manner both Rees and J.J. Williams aligned themselves in defence. There was utter panic when the ball went to Gourdon, on the right, and it was he who scored France's first try.

It seems likely that J. J. Williams will go on, although it may sound blasphemous even to hint at it. J. P. R. Williams' time is drawing near.

Angry collector will sell abroad

MR. DENIS MAHON, owner of a famous collection of Italian 17th-century paintings, has decided that on his death it should be sold abroad in protest against proposals concerning the Government's new £15m National Heritage Fund.

The collection of 70 pictures and 50 drawings, was to have been offered in lieu of tax to museums in Britain through the National Art Collections Fund.

Eight or nine of the works have already been sought by the National Gallery and one is at present on loan there, a work by Guercino. They would fill gaps in the gallery's collection.

Switch

Mr. Mahon is angry about the Government's proposal to end the "in lieu" provisions, the practice whereby collectors can offer works of art to the Government in lieu of capital transfer tax.

Under the new system, drawn up by the Treasury, an owner will be responsible himself for the sale of his artistic holdings and his executors will pay in the normal way.

This is considered a simplified system by the Treasury but is disliked in the art world because it tilts the balance away from the intrinsic value of pictures in favour of the purely financial consideration of how much they can make in the saleroom.

It also presents the danger of important pictures going abroad to be sold.

Some people also feel that the new provisions will favour major national collections, if paintings

stay here, at the expense of poorer provincial galleries.

Mr. Mahon said, "The outlook of the old system was essentially that works of art had a validity in themselves, but the new provisions change the basis of that entirely and make it purely financial."

"In that case, include me out. There is more to art than just money. But if they want it that way I will render unto Caesar the things that are Caesar's."

He intended to change his will, at present in favour of the bulk of the collection remaining in Britain. Now, if the proposals became law, his executors would be instructed to sell the pictures abroad after his death "to raise the maximum amount they can for the Treasury."

"I just wanted them to be acquired as painlessly as possible by the nation but there comes a point where one has to take a firm stand on a matter of principle. It is something of great importance to me."

"If you regard everything in terms of money these pictures will raise a great deal—I can tell you that without any doubt—but the country will lose what I think are great works of art."

Mr. Mahon is an expert on Italian 17th century works. He began collecting in 1934 when many of his pictures did not command such prices as they would now fetch. He was a trustee of the National Gallery for 14 years from 1957.

Mr. Hugh Leggart, secretary of the pressure group Heritage in

Danger, said: "This causes us the greatest possible concern. The collection is the finest of its kind in private hands, and it would be a disaster if it left Britain."

"We will do all we can to

get these proposals changed. A trustee of one of the greatest houses in the country has already been on to me about the future effect of the in-lieu provisions. A lot of people are very concerned indeed."

More talks today on plan for student fees change

BY MICHAEL DIXON, EDUCATION CORRESPONDENT

THE GOVERNMENT'S scheme to make students' unions more accountable for their £13m income from taxpayers' funds enters a new stage of negotiations in London today.

The Education Department, local authorities, university vice-chancellors and the National Union of Students will meet to discuss a plan to end the automatic State payment of fees ranging from £50 a student in some university unions to 50p a head in small colleges.

The Government's scheme is for a minimum of about £15 a head to be paid through local education authorities, leaving each student union to negotiate extra finance from the budget of its university, polytechnic or college.

The National Union of Students terms the plan a "recipe for annual turmoil." It fears that local unions will fare badly in competing for funds with other institutional interests, including those of

academic staff.

The union wants a national and local organisation in which it can join other groups in specifying how much each local union should receive.

'Sex bias' in airline's job offer

A HOLIDAY airline's hunt for a top executive was "tainted" by sex discrimination, an industrial tribunal has ruled. Former RAF navigator Mr. Edward Gorman, Britannia Airways' personnel controller, was so anxious to pick a man for the job that his attitude was a deterrent to women applicants, it said.

In a ruling yesterday the tribunal criticised the job description for the £5,000-a-year post of personnel manager because it specified "male desirable."



# Peking's great gamble in Vietnam

## Changing the House

THE HOUSE OF Commons today begins a two day debate on its own procedure. The starting point is the Report from the Select Committee on Procedure produced as long ago as last August, the delay in holding the debate being itself a comment on what the Government thinks of the recommendations in their entirety in order to applaud the objective. The present committee system in the House of Commons is almost wholly random. It is unclear, for example, why there should be a committee on overseas aid but not on agriculture or education. In fact, committees on both those latter subjects have been tried but abandoned because it was too difficult to establish a *modus vivendi* between the MPs and the departments concerned. That should never have been allowed to happen.

Equally, where committees do exist, their purpose is not always obvious. There are doubts about how far they can demand evidence. There are limits to the ways in which they can call on outside advice and their reports frequently go unnoticed by the House of Commons as a whole. It is also the case that existing committees do not always make the most of the opportunities that are available to them. Too often they fail to ask the right questions and, even where some information is elicited, they fail to follow it up. There is just a touch of undue deference to the Ministers and senior civil servants who agree to come along.

Quality  
The Procedure Committee recommends dealing with some of these problems by integrating the Committees more into the Parliamentary system. Not only should there be more such bodies, but they should have more powers. They should be allowed to take on outside advisers and pay them. There should be established ways of ensuring a debate on the committee's findings in the full House.

It is quite likely that such reforms, if implemented, would be beneficial, though one also has to remember that the effectiveness of any committee depends more on the quality of its membership than in the particular procedure. There may be better and more comprehensive ways of improving the performance of the House of Commons. Yet, in the end, the House can only reform itself. It cannot be done from outside and these are the only proposals we have. The importance of the two day debate will be in revealing what the House as a whole thinks about its own workings.

## Testing French steel

THE PROBLEMS of the French steel industry, now causing serious labour unrest in the Lille region and Lorraine, are by no means unique. Other West European countries, most notably Britain and West Germany, have had to grapple with similar crises and in France itself the ailing textile industry has set a gloomy precedent. Indeed, the international nature of the adjustment problem has been repeatedly stressed by the French Government in its bid to win acceptance for its rationalisation plans.

Local impact  
Other points of the Government's case will seem familiar. The steel industry, indeed the French industry as a whole, it says, cannot remain competitive in today's changed international economic circumstances without major surgery. It is a point of view held all the more strongly in the light of the new policies of "economic liberalism" that are being so actively pursued by M. Raymond Barre, the Prime Minister. While accepting that its plan to close steel plants will cause short-term hardship, the Government maintains that the long-term consequences will be more, not less employment. Besides, Paris points out, prospects for overall growth, investment and industrial output are all now looking up.

Six months  
M. Giscard d'Estaing still has time on his side. The next Presidential election is not until 1981. For the past he is confident that direct elections will strengthen his power base by showing massive support for his "European" policies in preference to the increasingly nationalistic attitude of the Communists and Gaullists. The three years that M. Barre gave himself to put the economy right still have six months to run. If he has not yet totally succeeded, he has at least some progress to show. His decision to let prices find their own levels, for instance, has not led to the feared inflationary upsurge. The crisis in the steel industry will certainly need careful handling, but it has not yet disproved all the assumptions underlying the Government's economic policies.

Sovereignty  
The dangers are all the greater in that while the problems of the steel industry are common to many countries, the nature of protests in France is not. Violent street demonstrations are part of the country's

CHINA HAS taken an enormous gamble in Vietnam, risking at one and the same time that the Russians will be tempted to retaliate, and that the West will allow its new friendship for Peking to cool. China calls its incursion no more than simply a punitive strike, announcing that Chinese troops do not intend to occupy Vietnamese territory. But a deliberate move of this sort will confirm the worst "yellow peril" fears of the Soviet Union.

Military intervention of this kind has not been characteristic of the Chinese in recent years. In 1978 they began sabre-rattling over the issue of the Senkaku Islands in the East China Sea, whose ownership they dispute with Japan. But in spite of the important oil potential of these tiny reefs, they backed away from trouble to ensure the signature of their long-term trade agreement and treaty of friendship with Tokyo. In 1974, while North Vietnam was preoccupied with its war against the South, the Chinese swooped on the Paracels, a small group of islands off Vietnam but claimed by China. They too are important for offshore oil.

Their only previous large scale military action since the invasion of Tibet and the Korean war was against India in 1962, over disputed border territory. So successful was that lightning strike that New Delhi lost face throughout Asia and its military machinery had to be completely overhauled, a precedent which the present Chinese high command may well have had in mind.

IMPERIAL CHINESE rulers who occupied Vietnam for 1,000 years and annexed Vietnam in the last 900 years have been replaced by a Communist Party, but in Vietnamese eyes the Chinese of yesterday are no different from the Chinese of today. Seen from Hanoi—where major historical sights include temples dedicated to the national heroes who fought against Chinese invasions—the Chinese incursion must seem like just another episode in a historic conflict.

In fact over the last two months Hanoi's domestic propaganda has stressed this continuity of history to explain the conflict as well as to boost the country's morale. Time and again in the past, the propagandists said, the Vietnamese led by the legendary Trung sisters, Ly Thuong Kiet and Le Loi have defeated enormously superior Chinese invaders. Similarly the Vietnamese people under the "correct leadership" of the Vietnamese Communist Party would certainly defeat new Chinese attempts to dominate Vietnam.

This simplistic historical explanation, however, only touches a part of the conflict. During the Vietnam war involving the Americans, Hanoi's relations with China were claimed

so although they are outgunned by the Russians they are certainly not unprepared.

The Chinese have imperilled their new relationship with the West by rousing latent anxieties, some of them very recently lulled into tranquility. The process of normalisation of relations with the U.S. is based on a degree of American trust that Peking will not attack Taiwan. While that would be far more difficult militarily than the present action in Vietnam, because of the 120 miles of sea between Taiwan and the mainland, the Vietnam strike brings the question of Peking's long-term intentions into the foreground.

## Cold water on new warmth

The Chinese move will certainly pour cold water on the new warmth between Chinese and Americans that Vice-Premier Deng's recent visit to the U.S. engendered. While President Carter at no time endorsed the Vice-Premier's constant warnings about the threat of war from the Soviet Union and maintained constantly the need to sign a new Strategic Arms Limitation Agreement with Moscow, the visit did produce a Sino-American bonhomie which must now have been rudely disturbed. The President has pursued a scrupulously even-handed policy in what he has said about both Moscow and Peking, by criticising the Vietnamese invasion of

## As seen in Moscow and Hong Kong

conflict with Vietnam. Hanoi also felt that despite the numerical superiority of the Chinese army, it is a flabby and poor fighting force led by old generals whose most recent experience of full scale war was in Korea in the 1950s.

The Vietnamese also felt confident about the sophisticated tanks, aircraft and missiles they possess compared with China's largely antiquated equipment. The Chinese incursion across Vietnam's border has disproved part of these calculations. Coming days will show how well founded is Vietnam's feeling of military superiority.

Many observers feel that the initial Chinese advance might turn into a very costly operation if the Vietnamese cut the path of the Chinese retreat through mountain passes by outflanking movements of their regular units and massive use of air strikes.

## Nyan Chanda

THE SOVIET promise to honour obligations under the Friendship Treaty with Vietnam does not mean that the Soviets will attack China. There is little doubt, however, that the situation is escalating dangerously.

The Friendship Treaty obliges the parties to consult in the event of a threat or attack

to be a swift surgical strike against Vietnamese border posts and towns, taking only a few days. However, given the hilly country of the border area and the immense experience of the Vietnamese and their much superior fire power, the Chinese move could go badly wrong. The Chinese are inexperienced in modern warfare and while no one denies their guerrilla capacities this type of attack is much more than a commando raid. It remains to be seen whether they have the requisite transport, arms, and air cover. If they do not, they are likely to get stuck in continual border warfare.

In the past month the Chinese have built up their forces along the Vietnam border to something like 100,000 men, instead of a new commando with Korean war experience and, according to Hong Kong reports, moved about a third of their fighter aircraft strength to the area. These troops have been reinforced by units not from China's northern borders, but from Fujian Province, opposite Taiwan.

Most of the Vietnamese army is at present supporting the new leadership of Heng Samrin in the Cambodian capital, Phnom Penh. It was set up early this year after Cambodian rebel forces, strongly supported by the Vietnamese, had invaded and expelled the previous Pol Pot leadership. Pol Pot men took to the mountains in the southwest, where they are apparently maintaining a strong rearguard guerrilla action with Chinese support.

The guerrillas are giving the new Cambodian Government

## Colina McDougall

been grasped by many Soviet citizens in Moscow. They are hoping that the situation will be brought under control.

A top Soviet official on Chinese affairs, in an interview with the Financial Times two weeks ago, emphasised that the Soviet Union considers its Friendship Treaty with Vietnam as a political not a military treaty. Clause Six, however, calls for consultations in the event of any attack on either side.

He also underlined that the Soviet Union did not think that China would risk all out war with Vietnam: "Experience shows that one has to fight Vietnam seriously or not at all. This would require China to throw 2m or 3m troops into Vietnam. Not only would they be foolish to start but war would also divert badly needed resources needed for the four modernisations and would damage Chinese reputation in the world at a time when it needs an attractive image."

In spite of this, however, the official made clear that the Soviet Union and its ally Vietnam expected China to concentrate troops and be added that "irritating conflicts along the Vietnam frontier were possible."

As the Soviet leadership considers its options, the potential seriousness of the situation has

## MEN AND MATTERS

### The old block about new chips

If there is one attitude which many British company directors share with trade union leaders, it is a deep suspicion of the silicon chip. A high-powered study is about to start, investigating why some industries still fight shy of seeking ways to use micro-electronics.

Sir Charles Carter is the driving force behind the study. He is chairman of the research and management committee at the Policy Studies Institute and two years ago headed the controversial inquiry that urged in pursuit of technological efficiency—the dividing up of the Post Office.

Carter tells me that the new investigation, costing upwards of £100,000, will not depend upon government funding. "Governments tend to attach conditions to their money. We

shall be seeking answers to some questions they may not want asked."

The Policy Studies Institute will not concern itself with the general impact of micro-processors. Carter says there is enough research going on already into the effects upon employment and styles of work.

In immediate control of the study will be James Northcote, a senior fellow at the institute. "But this is not going to be a piece of academic research," says Carter—formerly Lancaster University's vice-chancellor. "It is a very urgent matter indeed. We must find out why British firms do not move as quickly as foreign rivals in the acceptance of new ideas."

Carter has a perspective on the problem: 20 years ago he was co-author of a report on innovation in British industry. "Since then, things have got no better. If a sector of industry was behind then, it is further behind now."

Is it not true, I asked, that we have always been uniquely clever at inventing things, but poor at implementing them. "Quite a few other countries like to see themselves in that way," said Carter drily.

### All at sea

A Malta conference, costing about £1m, has run into a storm over the amount the host country is willing to pay its own staff. The dispute has provoked so much domestic acrimony that Premier Dom Mintoff has dismissed the man appointed by the 35 nations involved to run the proceedings.

The ousted executive secretary, Chevalier Paul Naudi, is a permanent secretary in the island's administration. He is now so enraged that he is threatening to "expose" Mintoff's style of running Malta's news conference in Brussels.

The gathering is designed to promote cultural, economic and scientific ties in the Mediterranean region. But so far, Naudi's dismissal has only been the prelude to quarrels over the status of North African states invited to the get-together. The Soviet Union demands that they should only be observers; Mintoff insists they should be full members.

All in all, Malta's lavish outlay on plans to present itself as the new magnet for international conferences is off to a tricky start.

### Past discounted

When Union Discount moves back this morning into its Cornhill home—after a £5m four-year refurbishment—it will be saying goodbye to the quill pen era. Hardly surprising, you might think, for a company whose daily "plusses and minuses" are around £500m.

But the discount houses have had a fondness for the old ways. Richard Petherbridge, senior

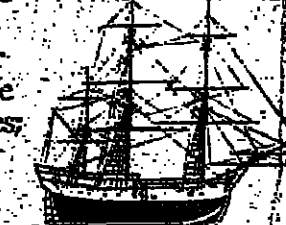
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"Surely that's not all he brought back!"

Observer



# FINANCIAL TIMES SURVEY

Monday February 19 1979

Networks making a big impact

By Max Wilkinson

THE POLITICAL mind, confronted with the idea that computer networks can be a substitute for roads, is likely to experience an understandable giddiness.

However, it is a serious idea which is being put forward increasingly by analysts of computer technology; and it is not particularly visionary. The Americans have even coined a portmanteau word for this fusion of computing and communications, "comunications," which would have delighted Lewis Carroll. The term is perhaps too odd to survive in Europe, but the ideas behind it are taking root fast. The fusion is, indeed, expected to bring revolutionary changes in the way people do business within a few years.

A major report on data processing published last year by the French Government ("L'informatisation de la société") coined its own special term telematique to describe the phenomenon.

In Britain, however, the political discovery of the micro-processor and its potential significance has tended to divert public attention from this other trend which, in the long term, could have a much more profound significance—the development of cheap communications between cheap computers. Certainly the production of mass-produced micro-electronic circuits will be one of the major elements causing the reduction of costs, but even the most complex of these miniature circuits will be only the building blocks of much more impressive structures.

By itself the idea of wiring up computers to enable them to communicate with each other is not novel. The importance lies

in the reduction of costs which will put the equipment and services within the scope of a wide range of businesses. Indeed, computer networks are already beginning to change business practices and to make their impact on society as a whole. Indeed, Mr. James Martin, a former IBM engineer, and now one of the best known writers on computer networks, points out in his book "The Wired Society" that the acceptance of computer networks will depend to a considerable extent on the price of oil.

## Exchange

The reason is that a large proportion of the world's consumption of petroleum is used in transporting people who simply want to exchange information. Much of this communication could be delivered, in one way or another, in the form of computer data, particularly where face-to-face confrontation is not essential. Executives often have to travel to a particular office merely to gain access to files, for example. If the files were all stored on a computer network which could be inspected through the telephone system, travelling could be reduced and meetings of a routine character cut down. Already in the U.S. the networks for carrying computer

data, particularly Telenet, are posing a challenge to the physical transport of surface mail, since large sections of business communications can be put in the form of computer data and shifted around the country quickly and cheaply.

Competition will be intensified by the new satellite services, particularly the U.S. satellite Business Systems network which is jointly owned by IBM, Comsat and Aetna Casualty and Surety. It has received a licence from the Federal Communications Commission to offer leased data communications channels over the U.S. continent starting in 1981. This venture and others projected by companies such as Xerox and ITT have important implications for the whole communications and computing industry in the U.S. and in the rest of the world.

M. Simon Nora and M. Alain Minc, author of "L'informatisation de la société" comment: "Their power and universality, accessibility and transmission range will make communications satellites the 'imperial highways' of the future. If IBM dominated satellite transmissions the company would transcend the role of a mere manufacturer; wittingly or unwittingly, it would participate in world government. It has everything to become one of the great

world regulatory agencies."

By the mid-1980s a new generation of much more powerful satellites is likely to be available, capable of transmitting television programmes direct to rooftop receiving dishes across large sections of the world. These big satellites could just as easily be used for sending vast quantities of data which could be received in a similar way. Since any large company could easily put up a receiving antenna, the system poses a significant threat to the current monopolies of all the present telecommunications authorities (PTTs) in Europe as well as in the U.S.

## Consequence

The expected consequence is that data communications will become much cheaper. The analysts of SBS Publishing, of San José, California, for example, predict that the cost of digital communications will be reduced by a factor of 10 in the second half of the 1980s. At the same time local links will be greatly improved by the use of modern high-capacity lines including optical fibres (hair-thin threads of glass which carry information in the form of a high-intensity pulsating light).

The advantages of trans-

continental and transatlantic satellite links clearly will be seized first by the larger multinational companies, which will use them as main arteries for internal communication. However, the same principles apply to systems used by much smaller companies for a computer network all in one building can function in just the same way as if each of the different machines were thousands of miles apart. The main point is that networks are becoming more important than machines.

The reason is that the continual fall in the cost of computing (at about 20 to 30 per cent a year) is making the economics of small local processors increasingly attractive. This is a reversal of the trend of the 1960s when all computing functions tended to be concentrated in a single department based on a relatively expensive large computer.

To cope with many different types of computing task, a batch system was used. For example, all payroll accounts would be processed together, at a particular time in the week. Other batches of work would be processed, all in regular order. The result was a rather cumbersome series of systems for entering and organising data to suit the convenience of the computer's schedule.

Batch processing is still commonly used, especially in large computer installations, but it has often put considerable strain on company organisation. It is therefore tending to be replaced by inherently more flexible systems of "real time" or "on line" processing. The difference is that in a real time system new data can be entered into any of the computer files at any moment instead of having to queue up until the next relevant batch is being fed into the machine. Similarly, any of the files can be inspected at any time by means of a number of different terminals all operating simultaneously. The best known example of real time computing is the airline booking system, which carries an always up-to-date list of available seats. The control computer files can be altered and reviewed by hundreds of different terminals in booking offices all over the world. The airline system is therefore an example of a distributed network which depends upon extensive data communications for one of its main functions. Similar systems are used in banking and many other businesses which depend on the transmission of detailed up-to-the-minute data.

In the next decade many much smaller companies will start to use such systems as they become cheaper to use. One clear implication for the \$30bn world computer industry is that the emphasis of the market will continue to shift from large machines to terminals (particularly so-called "intelligent terminals" which include some computing power) and towards small communicating computers.

Already peripherals (including magnetic memory storage) and terminals account for nearly 45 per cent of the industry's sales, and represent twice as much as all the sales of large mainframe computers. Sales of mainframes themselves represent only about a quarter of the industry's total revenues, a proportion which will almost certainly decline in the next ten years.

The traditional distinctions between mainframe computers, mini computers, terminals and micro-computers are, in any case, becoming more misleading than helpful. The point can be illustrated by a forecast from Diebold Research that by 1990 a computer processor will be available which has 25 times the power of an IBM 370/168, (one of the largest) but costs only the same amount. Or to put it another way, small terminals will be able to include the same power as one of today's larger

computers at only a very small extra cost.

The clear implication is that computing devices will become extremely widespread and, paradoxically unimportant. The mere processing of data will be taken for granted, because it will become a cheap and widely distributed part of a system. Much more importance will be attached to the characteristics and purposes of the networks communications links and the terminals used to gain access to them.

## Emphasis

The emphasis on intelligent terminals can be seen from the fact that the world's largest civilian computing network, the General Electric (GEISCO) service, has recently offered intelligent terminals to its customers. Even though the network of 150 large computers linked by satellite is more than capable of carrying out any processing required by the customer, it has been found that many tasks can be performed more economically by a small local processor.

More complicated processing, which might involve data stored on different sides of the Atlantic, would, however, be performed by the GEISCO Mark 3 service which the local processor can plug into using an ordinary telephone connection. Local terminals in more general networks will not merely carry out processing on their own they will also carry out the important task of compressing text into the pulses of computer language. When so compressed the text can be sent, perhaps at night, to a similar machine. This will store the electronic information in the blink of an eye and then type it out at leisure.

Such "electronic mail" requires a computer network's communications, but uses only a minimum of computation.

This kind of application is predicted to grow rapidly, if only because companies already use computers for their more complicated data processing needs. The challenge of the next few years is therefore to make computer systems "friendly" and easy to use in order to spread cheaper and cheaper machines across ever-widening markets. And to prepare for the day when computers in some form or other will be as common as telephones.

## Olivetti Systems. Intelligent enough to work on their own. Adaptable enough to join any network.

There's a new breed of distributed data processing systems. It comes from Olivetti.

Over 91,000 new Olivetti A5, A6, A7 and TC800 systems have been sold worldwide, spearheading the drive to data devolution.

Their programmability permits them to work independently or to integrate easily with almost any mainframe computer.

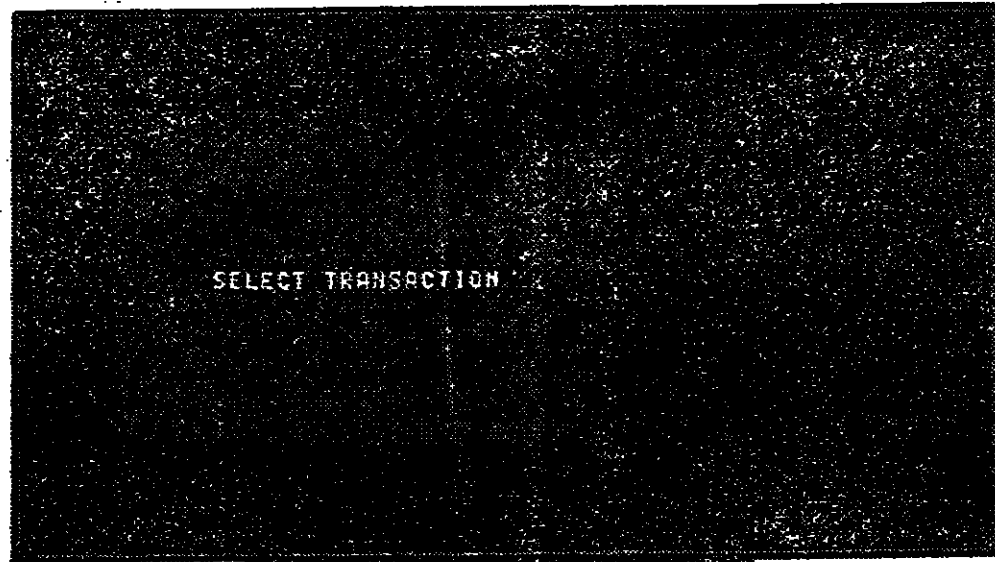
Their modularity allows enlargement of existing teleprocessing networks.

One of the Olivetti distributed processing systems is the TC800, an intelligent modular terminal system with a difference.

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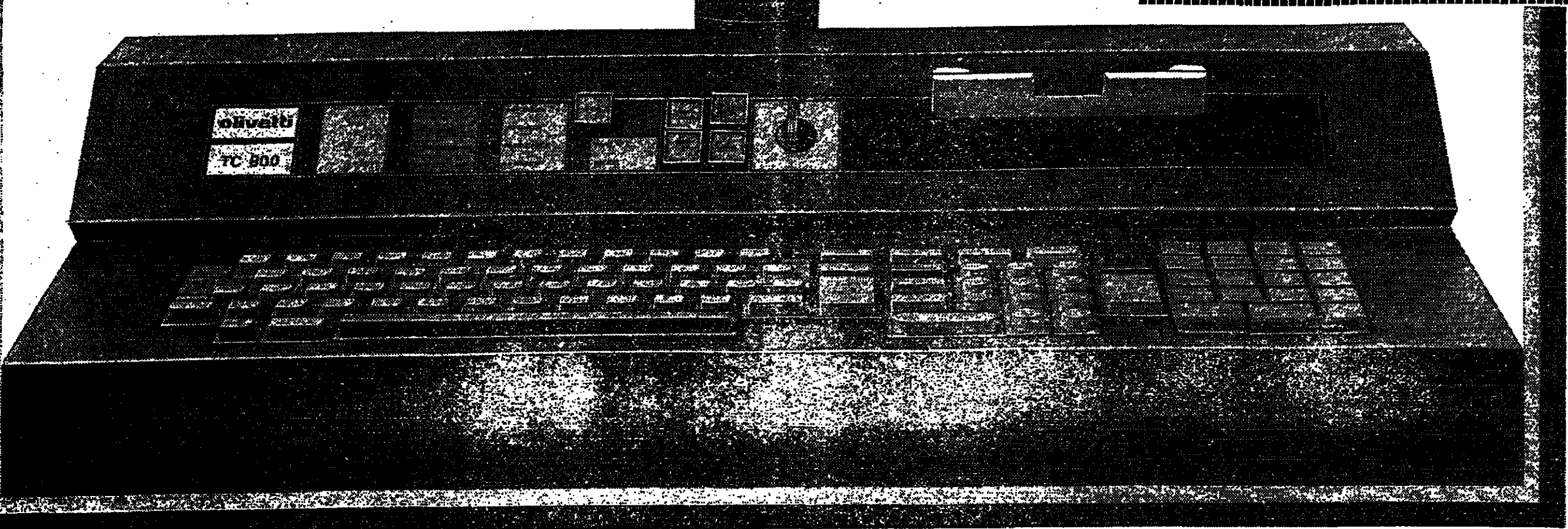
All of which has already made the TC800 the ideal intelligent terminal system for finance, government and industry.

Olivetti has installed throughout the world over 80,000 terminals and 180,000 systems for data and word processing applications, over 165,000 teleprinters and 350,000 accounting machines.



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Name \_\_\_\_\_  
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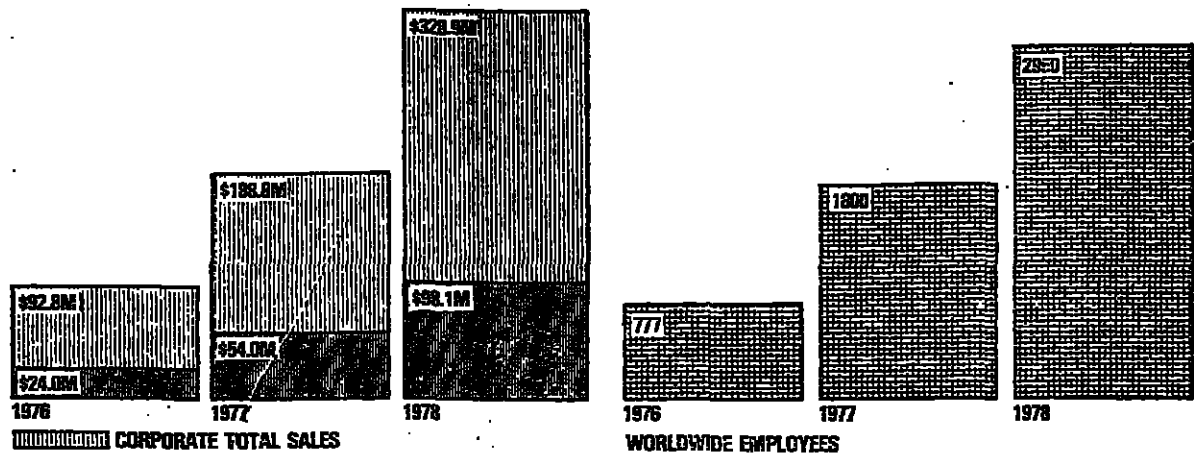




THE COMPUTER INDUSTRY II

# Amdahl

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# The top names and their rating

### REVENUE INCREASES

The "big seven" computer companies, figures in \$m.

	1976	1977
	\$m	\$m
IBM	12,717	14,765
Burroughs	1,630	1,844
NCR	1,390	1,574
Control Data	1,331	1,513
Sperry Univac	1,430	1,472
Digital	736	1,039
Honeywell	914	1,037

Source: Dataquest.

TALKING ABOUT company fortunes leads inevitably into the numbers game, and since the computer industry is the one which throws up the most startling numbers, the game becomes that more incredible in its results.

Take, for instance, the case of Storage Technology Corporation (STC), a stratosphere high-flyer whose 1978 turnover was 110 per cent up at \$220m with profits up 135 per cent at \$26.8m.

Company leaders talk confidently of "overtaking IBM sometime soon." And, indeed, consulting any fairly advanced business calculator shows that on present performance STC should overtake IBM, with its \$20m turnover and better than 14 per cent growth, in about seven years' time. STC's president has said the company's accelerated growth will continue well into the 1980s... but to that extent?

Every management committee has to operate on projections of many kinds to steer company fortunes, and one of the most difficult tasks must be selecting external factors of importance, and weighing these factors against solid figures.

### Factors

In looking for factors that will influence all computer builders everywhere until the middle of the next decade, it is not difficult to decide that the three most important must be the signs that the U.S. Justice Department is seeking a rapid solution to its ten-year-old monopoly wrangle with IBM; the continuous rapid expansion in exports of data processing products from America; and the rapidity with which competitors are penetrating IBM's customer base with machines able to run IBM's and users' parallel software more effectively.

In the ten years since IBM calmly deposited two million documents with the Justice Department for consideration prior to the start of the monopoly proceedings—much to that august body's understandable consternation—IBM's sales have quadrupled to \$21.1bn and earnings quintupled to \$3.1bn. Indications from the U.S. at the end of January were that action was being contemplated that could bring an end to the proceedings this year.

Belief that an end must come to the legal charade soon stems from the conclusions of a Presidential Commission which were issued recently. One Commission recommendation would reduce the degree of legal proof needed to show that a monopoly existed; and a second would make it much easier for the Government and its legal forces to ensure that the situation will end and not recur.

If IBM should split into five groups, as has often been suggested it might, this will be against the judgment of most of its U.S. competitors in the general-purpose computer market. But why should the Justice Department seek to split up Bell Systems and leave IBM intact?

In some ways, this move has been forestalled already by IBM itself in a number of reorganisations, including the formation of the General Systems group. And while the slow process at the Justice Department seems to hamper IBM very little, nothing appears to reduce the flood of exports from U.S. factories. Last year with about \$4.8bn-worth of business equipment going abroad, 63 per cent of these computers, the increase in exports was about 26 per cent—higher than average industry growth.

### Important

It is important to record that while U.S. exports of computers and related equipment showed a growth during the year which indicated a year-end total of about \$2.5bn, the rate for the year was ten per cent. But in parts of computers and peripherals the figures for the end of the year is likely to have been around \$1.46bn. This represents a massive 68 per cent export rise, a figure which has many implications for the activities of American companies in Europe and elsewhere and also in this survey.

Interesting in the light of the foregoing is the forecast by Richard Gehring, Univac president, that 1979 deliveries of computers worldwide will reach \$17bn or 13 per cent up on 1978 which was 16 per cent ahead of 1977. This is by all makers everywhere.

Univac expected to exceed the \$2bn mark for the first time in its 1978 fiscal year which ends next month. For the 1979 fiscal year, Gehring said, a further growth in income of about 15 per cent was anticipated with orders up 20 per cent and prospects that by 1985 the company would grow to \$4bn.

Commercial computing map ten years ago and it is to a successor—the 1,100/80 Univac's biggest machine—that Gehring attributes much of the company's current success.

Univac was one of the five competitors with IBM that U.S. New York Stock Exchange analysts in 1975 expected to be showing serious signs by now of a demise early in the 1980s, with only Burroughs left healthy enough to continue to survive. It seems the prediction has been correct only in the latter case. Burroughs is indeed healthy enough to survive and has been making remarkable progress in both large systems and in complex networks, especially in Britain.

Meanwhile, NCR, which the analysts expected to be the first to go, pushed income up 19 per cent to \$85m and earnings up a record 61 per cent to \$90m last year. In 1978 the company announced that it would compete with IBM right through the range up to the very largest machines, which is strong talk for a supposedly moribund organisation.

Control Data Corporation, over which the analysts were also shaking their heads, but has designed the world's most powerful computer, the Cyber 208. This machine can solve 46,000 simultaneous equations, which means that it can handle models of the weather patterns in the northern hemisphere of a complexity hitherto beyond the capacity of existing machines. A consequence is that CDC has assured market for this equipment not only in every major weather centre but also in Government and big company computer centres where complex modelling is a large part of the workload.

### Tests

Using a complex of software, called AIDS, the engineers have been able to test out proposed innovation for the 20s before committing hardware. Working with Fairchild, they have also developed a family of large-scale integrated circuits for use in this and other members of the new super-computer group.

CDC, largest builder of peripherals outside IBM, also is gaining a great deal from the continuous growth in demand for peripherals.

For Honeywell, 1978 brought a 22 per cent increase in sales to \$3.5bn, of which computer equipment represented \$1.3bn (up to 25 per cent).

The Honeywell results will go a long way towards scotching the recurrent rumours that the company was preparing to abandon its computing wing to a competitor. How these arise when data processing is the most successful sector of the company is hard to say. They may derive from the fact that Honeywell found it necessary to abandon the design of super-computer it had on the stocks at Phoenix and start afresh, while agreeing to differ on very large machines with CII Honeywell Bull in France.

International stature can certainly be claimed from Britain's ICL which has just passed the \$1bn mark and is thus the world's fifth largest computer builder. Its 22 per cent growth to better than \$500m in 1978 coupled with a 24 per cent advance in pre-tax profits is all the more noteworthy in the light of manufacturing problems and sharply fluctuating exchange rates.

Order books are at record levels so the company is well on its way to achieving the \$1.2bn target for 1983. Difficulties with the most complex of the operating systems for the largest of the company's machines appear to have been contained and a remarkable success has been scored with the \$4m 2960 for which a 200th contract has just been secured.

ICL has not repaid the \$40m Government research and

to IBM marketing forces. But they should cause no rejoicings in traditional competitors' camps. The reason is that any user who moves, say, from a large IBM central processor to an Amdahl 5/S will already have given himself such a trauma that he is most unlikely to move again for many years.

Then there is the software question. For the 360s, the 370s and the new 308x equipment, machine and user application software is estimated by Gene Amdahl himself to represent an expenditure of \$200bn, by IBM and by users.

Software is expensive, conversion is expensive, so marketing men for the compatibles have a relatively easy pitch. They do not have to tell potential customers that there will be conversion changes and that some new software will have to be written—only that the new machine will cost less and run faster (in most cases).

### Conclusion

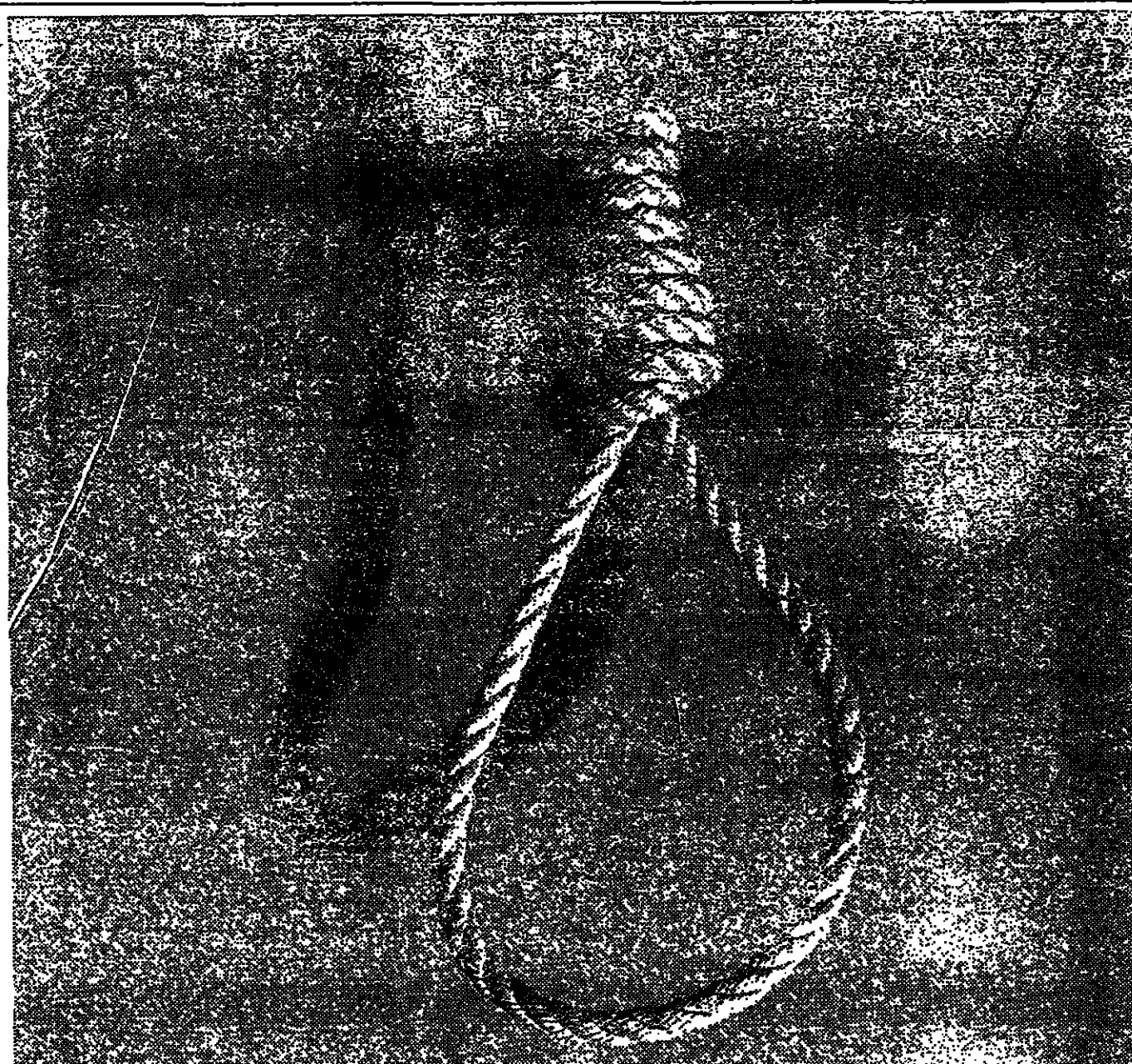
To sum up, in the compatibles ultimately could limit IBM's traditional competitors to that section of the market they can capture from scratch. Customers switching may be cut to a very low level well down in the range, which is where many recent client captures have been taking place—for instance IP System 3 to ICL 2903. And now Japan is seeking to extend its penetration of the U.S. market where, at present, only Fujitsu has a manufacturing base. The above refers to well over 60 per cent of the total computer marketplace.

So far as small business computers are concerned, the most recent compilation by Computer Guides showed that there were 53 entrepreneurs active on the UK market plus 28 manufacturing companies, including all the large mainframe makers and the leading makers of mini-computers.

This is in a market sector growing at between 30 and 40 per cent annually. So competition is intense and new contestants are appearing almost every week.

Many of the entrepreneurial group are—inevitably—basing their offerings on Digital Equipment Corporation Machines. One of them, Gamma Associates, is expanding so quickly that the day when its turnover exceeds the UK sales by DEC of its own units cannot be far off. One company in the supermini market which is worth watching is Tandem, a relative newcomer which boasts that in all its dual machine installations it has so far placed with users, it has not yet had a breakdown of service. With a predicted meantime between failures of 53 years this is not surprising.

Ted Schoeters



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THE COMPUTER INDUSTRY III

# Encouraging growth projections

IN TERMS OF international trade, Europe is easily the largest market for computer equipment, partly because of trading between the separate countries of Europe, but also because of the very large imports from the U.S.

United Nations figures for 1976, the latest available, show that in computer and office equipment total imports by European countries was almost \$6bn or 56 per cent of the total of world trade in that year. Total exports by European countries were just over \$5bn, which implies net imports of about \$1bn.

The figures show that France is the largest importer at

\$1,200bn compared with exports of \$658m. Germany came second with imports of \$1,181bn compared with exports of \$1,640bn and the UK third with imports of \$978m against exports of \$925m. Italy had imports of \$580m and exports of \$568m.

Analysis of the figures by 21st Century Research, the U.S. analyst, shows that the U.S. exports 26 per cent of the world trade followed by West Germany with 16 per cent, Japan with 9.6 per cent, the UK with 8.8 per cent and then France with 8.2 per cent.

It is worth comparing these figures with the often quoted fact that IBM alone has some

60 per cent of the world market for computers and that the American companies together account for about 78 per cent of the world market. This obviously reflects the fact that America is by far the largest market for computers and with about 46 per cent of the total 189,000 systems installed throughout the world (in 1976). However, it should also be remembered that most of the U.S. companies, particularly IBM, manufacture throughout the world, so that world trade figures do not adequately reflect the dominance of American systems technology.

Worldwide, the total computer market is estimated by the U.S.

consultants Arthur D. Little (ADL) to have been \$18bn in 1978. They expect a real growth of 40 per cent over the next five years, with the largest thrust in smaller systems. When the associated revenues from software, terminals, services and office systems are included, total revenues are estimated at \$28.4bn in 1978, a 19 per cent increase compared with 1977. The previous trend for revenue to be derived more from services than from hardware is expected to continue until, by 1983, the split will be about 50/50.

By 1983, ADL expects annual shipments of the U.S. mainframe suppliers to be between \$25bn

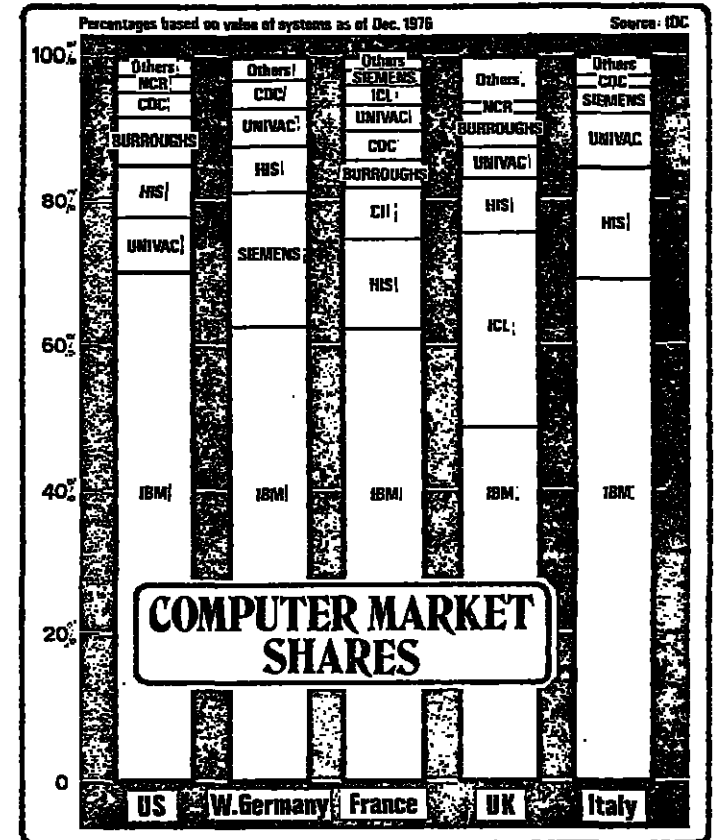
and \$29.5bn. The growth rate of small computer systems in the price range \$20,000 to \$250,000 is expected to be relatively much faster than for the large mainframe, with a doubling of shipments by 1983 both in the U.S. and elsewhere. One of the main reasons for the expected growth in small systems is the emergence of a new generation of equipment which is versatile enough to be used on its own or to be hooked up into a large network of systems. Small computers are therefore expected to find a market both among small-sized companies as well as with the big users.

For the large systems, costing more than \$1m, a growth of

about 50 per cent is expected over the next five years from the 1978 shipments estimated at about \$6bn. A continued increase in the market for IBM's plug-compatible equipment is expected beyond the 1978 figure of \$650m which represented about 3.6 per cent of the worldwide total computer sales.

In 1979 the general outlook of the industry is buoyant in spite of signs of an impending recession in other industrial sectors. A growth of between 15 and 20 per cent is being predicted within the mainframe industry against the 12 to 15 per cent in recent years.

The companies producing small computers led by Digital Equipment Corporation (DEC) are talking of growth of perhaps 25 per cent to 30 per cent, which may represent a slight slowing down from the explosive rate of the last few years, but is, of course, growth from a continually widening base.



## Service bureaux expertise

NOT ENOUGH attention has been paid in the past by Government to the work of the computer service industry, with the result that there now remains only one independent service bureau which is completely free of transatlantic trammels. It is CMG, which, unlike most of its peers, is not an affiliate of a much bigger UK or U.S. group.

Yet the service industry is a very large sector of effort in its own right with last year's total turnover probably well over the £300m mark, a significant figure even when compared to total sales of computer equipment in the UK in 1978 at £780m or thereabouts.

Rate of expansion of the industry is about 20 per cent annually, which will take it well over the £1bn mark by 1985.

Within the service industry, consultancy and software expertise sales are not easy to determine from Department of Industry breakdowns. An approximate figure would be about £40m for consultancy in 1978, with possibly the same for software work. The complication arises because it is not possible to differentiate completely between work done by bureaux for the major groups that own

them and operations on behalf of outside clients. This situation may not last, however, if the largest bureaux, like UCSL and BOC Datasolve, continue to move from strength to strength.

Within the past year or so, Government has become aware of the fact that the nebulous thing called "software" is indeed a most important commodity, though it can neither be patented nor trademarked with any success. It took 10 years for the industry to teach the pursestring holders that just as every car has an instruction manual for drivers, so must every computer have sets of operating instructions, both for the physical operator and the electronic controller inside the machine.

Another fact that took a long time to drive home was that in Britain, with its long tradition of engineering problem-solving there was a particular aptitude for software work that needed to be fostered and turned into an exportable asset. IBM, Honeywell and Univac recognised that fact long ago. So did the French makers seven years ago when the French Commercial Counsellor spent nearly two years fostering links between leading UK and French software groups.

At least we now have Inscac, formed under the wing of NEB and joining CAP, Logica and SPL International in a loose confederation where Inscac acts somewhat like an international broker for software products, for which it recognises a need and a market, commissioning them from one or other of the members as it sees fit.

Its first big step has been to sign an agreement with the well-known Calcomp organisation in the U.S. to provide at least 15 applications routines for Calcomp's existing and novel graphics equipment.

**Leader**

Calcomp is world leader in this area of computer-controlled devices by a long way and has just extricated itself from financial problems resulting in part from extremely heavy development costs.

Inscac has entrusted the work to SPL and some idea of the importance assigned to it can be gained from the fact that, at Abingdon, SPL is installing a full IGS-500 interactive graphics system to carry it out.

Inscac is also undertaking world marketing of the real-time language RTL 2, developed originally from small computers

by ICL and supported by STL. The peculiarity of the situation is that a Government-backed body is helping to promote a privately developed and internationally known language in competition with the CORAL language developed within UK Government establishments, primarily for military use, but now being spread into industry.

What really could put Inscac on the map is the conclusion (long-awaited) of an agreement with the Post Office to market Viewdata in America. This will not be an easy task, even though Inscac is being aided as a consultant by Sam Fedida who invented Viewdata, and it is hard to understand why the Post Office hung back.

It is even harder to understand why the Inscac organisation tends to draw Conservative bullets, since it is operating primarily as a marketing organisation run by people who have been in the business for years. There can be no comparison with the high-risk operation that Inmos represents—with public funds at risk.

Before returning to considering bureaux it is important to note that with its new medium-scale computers, the 4300 series, IBM cut machine costs to the bone and put up soft-

ware fees sharply. Software prices charged by the company become an important part of the total cost of these machines which run from, say, £40,000 to £140,000, for a workable array.

Some competitors, including Irel and Hitachi, anticipated these moves several months ago and alternative major software entities have been written and tested. Initial reaction from most competitors is that the move is intended to make switching from existing IBM equipment much less attractive, in a particularly vulnerable section of that company's range.

Bureau operators are lean and hungry men. They can teach most users and all manufacturers most useful lessons and take risks that the average user boggles at, simply because they know the equipment far better than most people. After all, if a bureau has to drop out a defective machine, it loses money and the goodwill of customers.

All the leaders of the big bureaux have an expertise which is not matched in any other area of the industry and it is some comfort to know that their advice is now frequently sought by Government.

**Ted Schoeters**

IBM, the barometer of the whole industry, reflected the general optimism among the big seven companies with revenues of more than \$1bn has increased its capital expenditure over the \$2.4bn spent in 1977, opened two new factories in the U.S. and increased employment by 12,000 people in the first nine months of the year. IBM's revenue for 1978 increased by 16 per cent to \$2.2bn with earnings up 14 per cent to \$3.1bn. Honeywell, the seventh largest company, in terms of data processing sales, increased total revenue 21 per cent to \$3.5bn, although only a proportion of that was accounted for by data processing revenues.

In reviewing the world's markets the two great uncertainties are the potential for selling computer systems to China and to the Soviet bloc. It is clear that China could represent an enormous market, and it has been taking an intense interest in all the major systems available. On the other hand, it is probable that it will want to manufacture as much as possible within China. The needs of China are still as uncertain as the political pressure in the West which may well build up feeling against exports of such a sensitive product to a Communist country. Similar considerations apply to the Soviet Union. The joint development of the ES series of computers by the seven Comecon countries is

quite unlike that for say ship-

building or steel. Market shares change only relatively slowly because users do not want to change a system once it is running without very good reason.

Within Europe government procurement policies will have to end by 1980 under present EEC policies, and it is still not clear whether a general European preference policy will be devised to replace it. This idea was recently suggested by Dr. Chris Wilson, managing director of International Computers Limited (ICL), but has not so far received any general acceptance. One of the main problems facing any such preference scheme would be to define what is a European company, since many of the American companies including IBM and Honeywell, have large manufacturing plants in Europe. Whereas, it is comparatively easy for an individual government to designate a chosen supplier, definition on a pan-European level would be much more difficult if not impossible.

**Max Wilkinson**

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# Honeywell



# THE COMPUTER INDUSTRY IV

## UK problems remain

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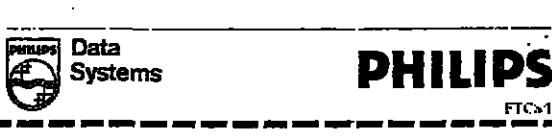
How do they help? For a start, you know your exact financial situation every day. You know who owes you what, why, and for how long. All your payroll, ledgers, invoicing, stock records and VAT take minutes instead of hours - with accuracy guaranteed. At £44 a week, Philips' computers pay for themselves over and over again.

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THIS YEAR in Britain there will be a market for integrated electronic circuits, of which microprocessors are a sub-set, amounting to about £147m. Domestic production will reach £80m, comparatively little of that being micros.

In 1982, the total UK market for this section will have risen to £130m, or a gain of 20 per cent over three years—not what one could call a mad rush.

But as the imports of components in general have been rising steadily over the past several years at a rate of 15 per cent a year, it is very likely that imports will account for an even larger share of 1982 consumption than the 46 per cent or so for 1979. Half the 1982 market figure, or £90m, would be a good guess.

In 1978, UK computer imports exceeded exports by £150m. In 1977 the figures moved even more sharply into the red at £200m and for 1978, judging by the related statistics from Department of Industry which encompass the first half year, the computer industry deficit is likely to have been a staggering £300m. Go on like that and the 1982 shortfall could be £450m.

### Peripherals

And where do we in Britain continue to fall down? Precisely where no real support or encouragement has been given by Government or any of its many arms—peripherals. Not to go into too much detail, the 1978 shortfall in this area is likely to have been £260m, very largely made up of ancillary pieces of equipment, or parts of equipment for peripherals manufacture, not precisely specified in Government figures.

This problem has not been tackled by Government and no amount of talk about microprocessors and their beneficial effects will have any influence on it at all. Overseas suppliers of these peripherals will build in—building in—micros as they see fit and if their use is justified, not because the DoI says they should.

Yet any computing system and most instrument systems based on micros need peripheral devices, or ancillary units of one sort or another to be of any use. And the value of such ancillaries and the cost of making the whole array of equipment operate (programming) would generally lie between one hundred and one thousand times the value of the micro itself.

It is hardly surprising that Jim Bonnett in the influential "Green Sheet" says wryly that "never have so many politicians jumped on to so small a thing as a microchip, so late in the game." He points out that the fear of job losses through automation has been with us since the 1950s and yet no great losses have materialised. On the contrary, where smaller businesses and industries are concerned, automation has tended to improve working conditions while creating new jobs in other industries and with suppliers.

Vehicle for the Government drive is the National Enterprise Board which has chosen to back entirely new ventures in components by Immos and GEC-Fairchild while ignoring the fact that Ferranti has developed and is selling a perfectly adequate military micro, or that Plessey has a number of exportable memory products including bubble memories, as well as a significant development of a large holographic computer memory now under way.

What the chances are of the chosen two in the very tough world of the semi-conductor industry will come to later. Meanwhile, there is some doubt as to just how much is being put into the micro plans.

A recent scathing analysis by Kenneth Warren, MP, took apart the much-vaunted "£400m boost for micros" and discovered only £100m, additional to £135m already earmarked. Of the latter sum, Immos receives £50m. The DoI's micro - processor Application Project (MAP) receives £15m and the Micro-electronic Industry Support Programme (MIPS) a further £70m.

The December announcement added £40m for MAP, and quite rightly so, as well as freeing another £60m for education and training, unspecified. Hence Warren's £100m.

It is this type of nebulous approach to education and training that David Firnberg, head of the National Computing Centre, says is the worst aspect of the new Government strategy. Mr. Firnberg reminds the Government that the French have set aside a much larger sum than Britain for education in data processing, while Japan's information-oriented education programme, drafted in 1972 (1) provided for an expenditure of \$36bn in the period 1972-85. That is over £1bn a year on education alone.

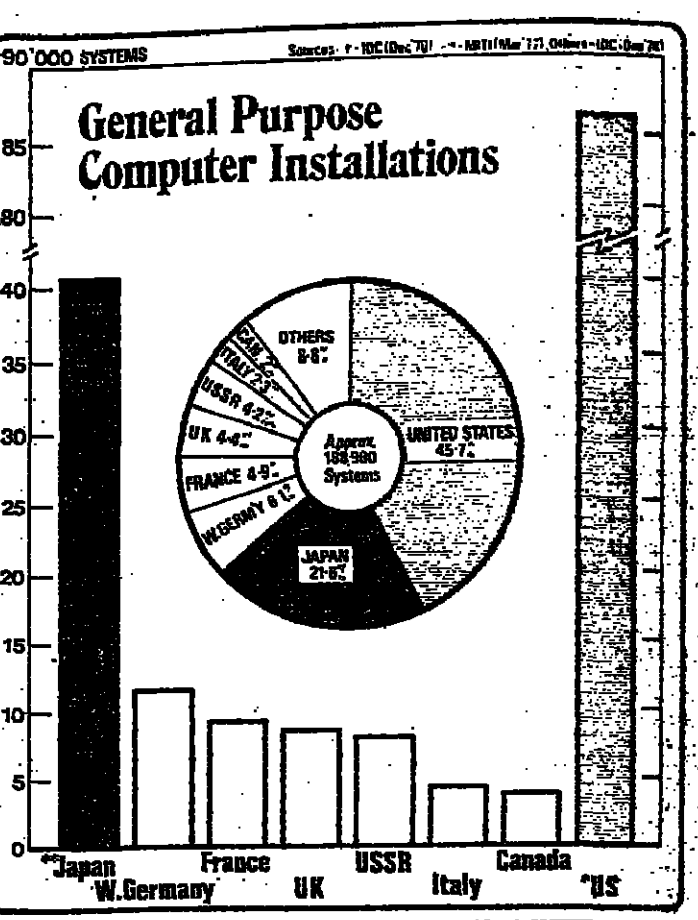
### Controversy

On Immos, Mr. Firnberg says that part of the current controversy stems from the fact that NEB is using public funds to back the entrepreneurial enterprise of three individuals. And as a general, but cogent, observation he underlines the danger in a small market such as that of the UK in splitting up available resources between too many recipients, or promoting ventures in areas where there already is savage and lethal competition, such as in office electronics.

Mr. Firnberg warmly welcomes any boost to application of computer techniques.

To look a little more closely at what may befall Immos and GEC-Fairchild, it is valid to point out that GEC has a history of abruptly terminating any manufacturing operation running at a loss. Sir Arnold broke with Mullard at a very early stage in the game when Associated Semiconductor Manufacturers was not yielding according to his taste. Later, when English Electric-Marconi was absorbed, Marconi's £15m showpiece plant near Chelmsford, making a series of standard integrated circuits, was closed down and all development concentrated in a small area at Wembley.

The reason for these moves,



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## Retail trade systems

A REVOLUTION at the checkout is planned for the retail industry in the 1980s as more and more retailers - especially the big supermarket chains - invest substantially in new electronic sales systems.

The supermarket chains, including Tesco, Sainsbury, Fine Fare and International Stores, are leading the way in the introduction of computerised checkouts because of the substantial benefits that higher stock control and management information can bring in a high-volume business such as food retailing. But retailers from all other sectors of the industry are looking closely at the latest technology - and the manufacturers themselves are anxious to achieve as wide a market as possible.

In addition, the most sophisticated of the new systems now on offer give shoppers a fully-detailed till receipt, describing each item and the price paid. Items are either keyed into the machine or read by a high-speed optical scanner which decodes a special bar code printed on the product. Such detailed information provided when customers pay is claimed by the manufacturers to give shoppers greater confidence in the accuracy of the till and it is argued that shoppers who are happy with a store's checkout arrangements are likely to shop there again. The electronic systems are also aimed at speeding up shopping flows, avoiding long delays, and the claimed savings in management costs should also help keep prices in the shops stable.

However, it is the management aspect of the new computerised checkouts - rather than simply providing more information for shoppers - that is the real reason why the big British retailers are showing so much interest in them. The new systems have the potential to completely change the face of retailing management, enabling stock control procedures to incorporate at least daily - if not more frequent - stock reports. Armed with such up-to-date information, the retail executive then is able to respond to sudden surges in demand for particular products, or identify areas where sales are weakest and not earning enough. In a fast-moving business such as food retailing where time literally does mean money and the volume of trade is large, the retailer who is able to make the fastest decisions usually comes out ahead of the game.

### Stocks

Computerised stock control linked to actual shop-floor trading also enable stores to cut the amount of stock held by up to a fifth, and to order new stock as late as possible to reflect market trends.

The pending electronic checkouts revolution in the High Street will also be helped by retailers' need to replace the checkout systems they introduced for decimalisation in 1971.

Mr. Irving Nixon, a retail specialist with IBM, the U.S.-owned multi-national, said: "The commercial use of low-powered laser beams to read catalogue numbers from a bar code symbol brings a new dimension to the role of the checkout. For the first time it has become practicable to collect information on every item which leaves a supermarket as well as recording what was delivered to the back door."

First there are electronic units that perform almost exactly the same work as the electro-mechanical units they are due to replace. The manufacturer has simply replaced the internal, electro-mechanical components with modern electronic ones. Prices, therefore, can vary enormously according to whether the unit is needed to serve only a few customers a day, or needs to stand up to the pounding received at a busy supermarket checkout.

At a more sophisticated level are the so-called "stand-alone data capture units". These perform all the normal functions of a cash register, but also record information about sales on an internal magnetic tape cassette which can be removed at the end of each day, or once a week, and taken away for computer processing.

At the top-end of the market are the fully computer-controlled systems which incorporate laser-scanning. These save electronic units at each checkout controlled by mini-computer in the shop or, in some cases, by a remote computer connected to the store via a telecommunications link. Such systems are much more flexible and have many more facilities than the stand-alone units.

IBM has emerged as one of the main suppliers of the new computerised checkouts for retailers. It has three main systems on offer: the 3650 retail system; the 3660 supermarket system; and its new 5260 retail system.

The 3650 consists of a point-of-sale terminal, a merchandise ticker encoder, a visual display-based purchase order/receiving terminal and a powerful controller that links the shop's retail system with a main computer.

The 3660 aims to integrate

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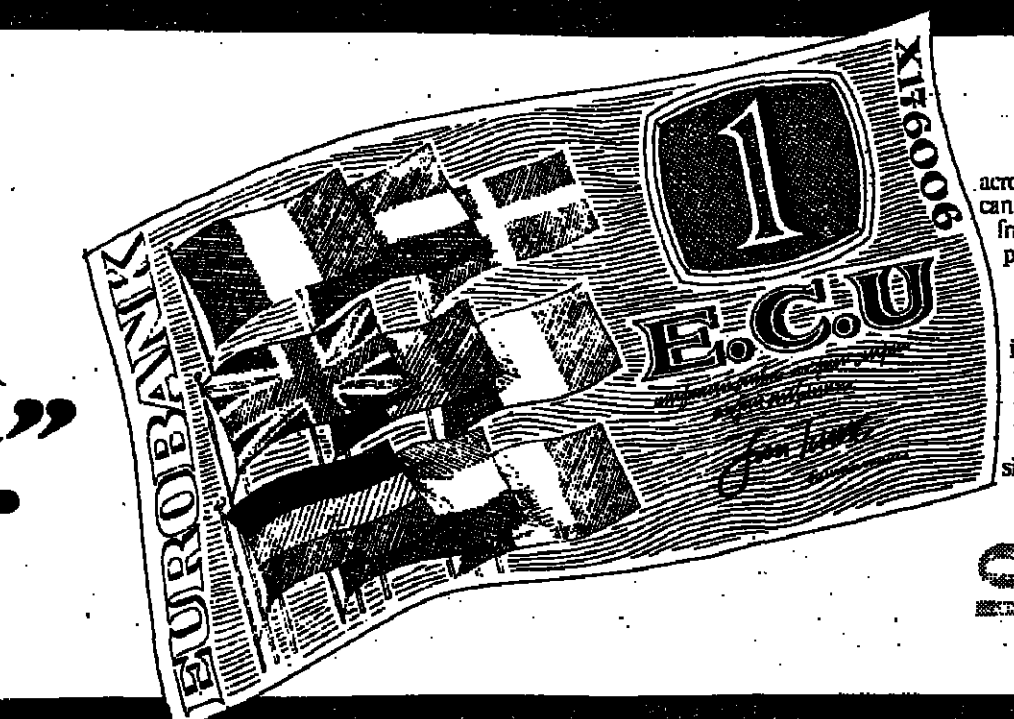
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THE COMPUTER INDUSTRY V

# A revolution in the office

A REMARKABLY wide range of companies is now committed to the belief that the office equipment market for computer driven systems will show very rapid growth in the next decade.

The emphasis which International Business Machines is beginning to place on small communicating systems and on terminals is a major indication of this trend. The development of computer-like products by the copier giant, Xerox points the same way. In the U.S., a very large number of smaller companies are attacking the market while General Electric has come in with a new printer. In Europe two large multinationals, Philips and I.T.T., whose centre of gravity has hitherto been well away from the sector, are developing a wide range of products for the office.

More traditional office companies like Olivetti and Adler, which have been diversifying in the small computer market, are now developing products which will communicate with each other. Major computer companies like International Computers Limited (I.C.L.) which have mainly been filling larger systems, are considering how to move down-market into smaller equipment. At the same time electrical companies with a broad base in heavy engineering, particularly Siemens in Germany and the General Electric Company (G.E.C.) in the U.K., are starting to move strongly into office equipment. Siemens for example has recently launched a word processor in the U.K., and G.E.C. has bought the U.S. office equipment company A. B. Dick as a starting point for its new strategy. Even the British Government has become involved with a £40m office equipment company called Nexos, set up as a subsidiary of the National Enterprise Board.

Several fundamental trends in society and in the evolution of electronics technology are causing this great focus of interest. First the continual automation of factories will displace more manual workers and add to the proportion of administrative, clerical and service work. Second, the scope for automation of factories will begin to be limited by political and trade union pressures as well as by the fact that automation will reach a natural technological limit. Automation of factories, with the attendant capital costs will accelerate the trends towards the dominance of large multinational companies, making large volumes for international markets. The television, automotive and calculator and watch industries are just three examples.

## Complex

These large companies will inevitably require highly complex management structures with sophisticated communications and information networks to co-ordinate their production and marketing. Already most major companies use large computer installations to deal with accounting, stock control, inventories and many other aspects of the business. Often these functions are carried out in fairly big central computer installations. The next generation of computer equipment will be aimed at integrating these central functions with computer techniques used for routine tasks in the office itself.

It is frequently said that the new office systems will depend upon the exploitation of the microprocessor or microcomputer, which can already be bought in its naked form for tens of dollars and will become both cheaper and more powerful. Certainly a complete generation of small office

systems has grown up on the basis of cheap, compact micro-computers. Many of the more successful have been focused very sharply on a few particular needs of the small office, particularly accounting and payroll calculations. They have been sold, not fundamentally as computers, but as accounting machines with rather better features than the electro-mechanical equipment they replaced.

## Capabilities

In one sense, however, the micro-computer is becoming the least important part of the office equipment systems which are being developed. It is now taken almost for granted as a basic component of almost all new machines, no matter what they do, so that micro-computers will become like electric motors, a vital driving force which is one of the least interesting aspects of a piece of equipment to the user.

Attention is shifting, and will continue to shift rapidly towards capabilities of so called peripheral equipment like printers, magnetic tape and disc storage units and television-like displays. At the same time customers will become more and more interested in how all these items of equipment can be connected into a communicating system.

Electronic typewriters, copying machines, accounting machines and magnetic filing systems are all capable of being wired together through a company's internal telephone system, or, with suitable conversion equipment through the public telephone network to remote sites. Use of ordinary telephone lines limits the network to relatively slow speeds for the transfer of information. Where the network has to carry a large amount of traffic, buildings can be wired up with high speed cable, carrying a constant stream of information from office to office.

Although the information will be carried in a stream of electronic pulses (the "bit stream") which is used and understood by computers, communication rather than computing is likely to be the essence of such networks. Bit stream can be used to encode the human voice, television pictures, facsimile images of documents or simple alphanumeric characters. A network once established can handle all these different types of traffic simultaneously, although the transmission of a facsimile document uses much more of the electronic pipeline's capacity ("bandwidth") than the transmission of text in a form similar to that of the Telex.

## Economics

The economics of establishing an electronic communications network within an office will become more attractive as extra pieces of equipment are added. Only the very largest companies will want to install a complete system all at once, and even they will wish to add new items as they come on the market.

A great advantage will therefore be reaped by those companies which can offer a complete system of compatible equipment. Customers will want to be sure, not only that all the machines which they buy talk the same language, but that future models still on the drawing boards will be compatible with earlier generations of equipment.

These ideas probably seem futuristic to office managers who are still replacing mechanical typewriters with electric machines, and who tend to think of small office computers as performing a special function, like accounting, required only in a particular office. However, sceptics should pause to consider the way in which plain paper copiers developed in little more than a decade from being an expensive novelty to an almost universal item of equipment.

Acceptance of the new systems will greatly depend on the ability of manufacturers to reduce the cost of some of the most important items of peripheral equipment. This is particularly true of electronic typewriters or "word processors" and so-called "intelligent copiers."

The essence of a word processor is that a typewriter key-stroke operates an electronic switch instead of a mechanical linkage. The electronic code corresponding to each character is stored in a memory similar to a calculator memory, or recorded direct on to a magnetic tape or disc. The word processor includes a micro-computer which allows the text to be corrected or edited in its electronic form. The memory is then

played back to drive a printer, which produces the finished document. Clearly the electronic data can be sent to a printer in another room or another building to produce "instant memos" or the beginnings of electronic mail. The keyboard and the electronics of such a machine are becoming very cheap to manufacture and could before long compete even with a manual typewriter. Printers, on the other hand tend to be rather expensive to produce. However, some intensive development work is now being put into the production of new methods of printing.

As a result of this work a range of new printers is likely to come on the market in the early 1980s, including some which are very competitive with the ordinary typewriter.

One promising development from IBM and A. B. Dick is the ink jet printer. This is a device which can "paint" characters on a page by means of a jet of ink whose direction can be altered by applying electric charges to focusing plates nearby. SBS Publishing, the Californian analyst, say that print heads for such printers can be manufactured very cheaply at about \$20 and have a very long lifespan.

It is possible, therefore, that ink jet printers will replace ordinary printers in many applications. The special advantage, however, is that the ink jet can move in any pattern, and is not therefore constrained to reproduce particular type fonts. An ink-jet printer could therefore be used in an "intelligent" copier in conjunction with a scanner, which first converted the image of the page to be copied into electronic code. Such scanners are already used in facsimile transmitting machines.

## Advantage

The great advantage of this type of copier over the conventional electrostatic plain paper copiers, is that the machine which scans the original document need not be in the same place as the machine which produces a duplicate. They could be connected by a cable or telephone wire and could be used for communication in just the same way as word processors.

More important, the electronic image of a page could be put through a computer processor before it is reproduced. It could therefore be changed in size, altered in content, simply filed or transmitted to another office before the copy is made.

It is obvious, therefore, that as machines for typing letters and copying documents begin to include a stage at which the information is put into electronic form, the advantages of communicating networks of similar machines will rapidly begin to be exploited.

The larger networks will be managed by computers, and they will also include numbers of small computers carrying out special tasks like file management and accounting. Executives will be able to use the networks for internal communication while using it at the same time to gain access to company information stored and processed in different departments.

## Networks

In the longer term company systems will want to hook into the larger national and into international data-carrying networks which are now being developed. One of the earliest of the specialised data networks was Teletext in the U.S., which switches "packets" of data throughout the country. In Canada, the Datapac and Info-switch services were established in 1977. In Europe, most countries are now developing high speed data networks, which are expected to be in widespread operation by 1980.

In France the system called Transpac is now starting operation. In the U.K. a switched data network will be developed in the early part of the next decade, and in Germany, the Datex service combines Telex and data transmission. Initially, these public data networks will be used for inter-communication between large computers or for high definition facsimile machines in regular communication. However, before long they will undoubtedly be used for electronic mail between large centres, transmitted during the idle hours of darkness. Eventually, when all telephone conversations are encoded in computer language, the distinction between data and voice networks will no longer exist. However, because of the vast amount of capital sunk into existing telephone networks, this will be a slow evolutionary process.

M.W.

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THE COMPUTER INDUSTRY VI

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PHILIPS Data Systems

# No stopping the Japanese advance

**THE STRENGTHENING** of the dollar against the Japanese yen, the lowering of Japanese tariff barriers against foreign computers and the general discussions about the imbalance of Japanese trade have all helped to postpone the feelings of anxiety, which the country's computer industry is beginning to inspire among competitors.

Yet the Japanese computing industry remains a serious long-term threat to its American rivals; and consequently any other computing company in the world.

Although Japanese computer exports are still quite small, there is something slow, deliberate and inevitable about the Japanese advance which can chill the heart of any rival data processing executive, especially if he is accustomed to a time horizon which is not measured in decades.

The stated objective of the industry led by Fujitsu and Hitachi is to increase exports from the present 5 or 6 per cent of domestic production to about 30 per cent in a few years' time.

Over the years a series of re-alignments have taken place among these rivals which demonstrates the impressive power of Japanese industrial planning. Last year, indeed, the Government managed to encourage a further shifting of the balance towards its avowed aim of creating one strong group in the large machine business, backed up by strong competition in the market for smaller business and process control systems.

Eight years ago, Japan had six major companies in the computer industry, all competing to develop mainframe computers for the domestic and international markets. It was obvious that Japan, with a domestic market only half the size of that in the U.S. could not support six different technologies.

The Government therefore used its substantial leverage through development grants and other means to encourage the companies to form three groups. They were: Fujitsu with Hitachi, NEC with Toshiba and Mitsubishi with Oki.

Nippon Telegraph and Telephone (NTT) was also closely involved in the joint development of very large scale integrated circuits in which all the companies co-operated.

These groupings were later reduced effectively to two, when Oki peeled off to concentrate on peripherals and Mitsubishi joined the Fujitsu-Hitachi group. Then, last year, Toshiba effectively withdrew from the large system business when it transferred its marketing of large systems to a joint NEC-Toshiba Information System Company, which is controlled 60 per cent by NEC with a 40 per cent stake by Toshiba.

This effectively means that Japan has two groups in the large systems business, one which is making machines which can plug into an IBM installation (the "plug-compatible" FACOM-HITAC M-200 series made by Fujitsu and Hitachi) and NEC's ACOS-series systems which are not compatible with IBM.

The NEC-Toshiba group has about 15.5 per cent of the Japanese market, which is certainly viable, but perhaps not comfortable compared with the IBM or the Fujitsu-Hitachi shares.

Further, International Business Machines (IBM) has recently been making a strong counter-attack against its imitators in the U.S. and in Japan with an impressive round of price cutting.

IBM has been able to hang on to its 32 per cent share of the Japanese market for computers sold to major industrial companies. By comparison, Fujitsu has just under 20 per cent of the market and Hitachi 18 per cent.

Fujitsu and Hitachi are, how-

ever, co-operating closely in the development of a computer technology which is almost completely compatible with that of IBM. It is realistic, therefore, to lump their shares of the market together and compare IBM's 32 per cent with 38 per cent for the Japanese "plug-compatible" rivals to IBM.

The other main manufacturers are: Oki Electric, Nippon and Nippon Electric Company (NEC), National Cash Register (NCR) Japan, Toshiba, and Mitsubishi.

In addition to pursuing the obvious markets in the West, the Japanese are now very active in exploring the very considerable potential for selling computers to China, Russia and the countries of the Far East.

**Disadvantage**

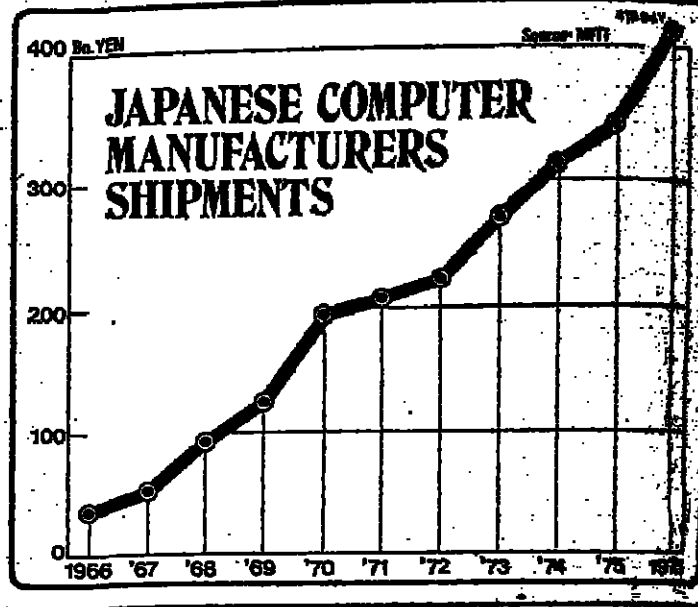
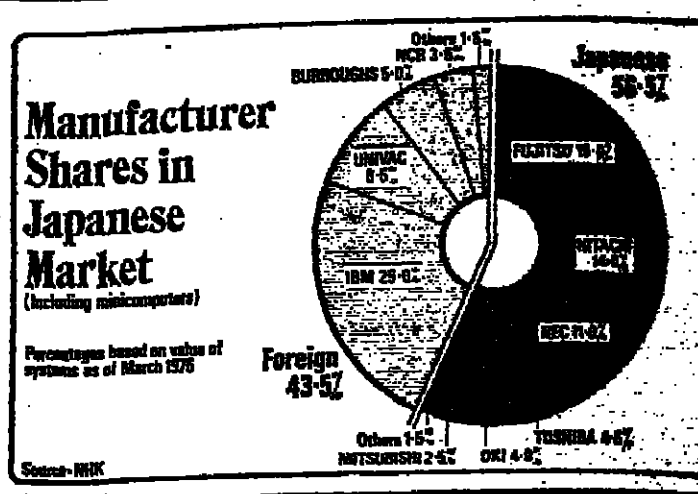
Exports to Communist countries, however, suffer the disadvantage that they are subject to the veto of COCOM, the international organisation which vets strategically sensitive exports to Communist countries. In the last year, the Americans under the leadership of President Carter, have shown themselves to be very suspicious about such exports.

Although the strategy of expanding exports through the plug-compatible route is the most sensible—and perhaps the only strategy for the Japanese at present—it suffers the disadvantage that it may, at any time, become vulnerable to pressure from IBM.

Some say that IBM is constrained by its own vast base of users who want to go on using the existing software. On this view, it would be difficult to change the design of IBM machines in such a way as to hurt the plug compatible manufacturers without at the same time raising an outcry from existing users.

On the other hand, there is the ever-present possibility that IBM, with its huge research effort, will find a way of making machines which cannot be imitated because they include vital parts of their internal programming on microscopic circuits (hardware).

Because of this danger, the Japanese Government has been strongly encouraging the development of software both for operating systems and applications. The aim is clearly to make the Japanese industry self-sufficient, so that it could survive independently of anything IBM chose to do. One of the major projects includes the development of pattern recognition systems, which are being produced jointly by all the major companies with a \$200m grant over a seven year period.



**JAPANESE COMPUTER BASED COMPANIES**

Companies	Industrial electronics sales (% of total sales)	1978
Fujitsu	46	1,074
NEC	35	1,170
Toshiba	22	1,170
Hitachi	15	1,048
Mitsubishi	25	973
Oki Electric	70	441
Omron Tateisi	95	441
NCR Japan	100	374
Nippon Univac	100	240
Matsushita Communication	55	240
Tokyo Electric	55	178
Kokusai	75	73

Source: Heavy Goods

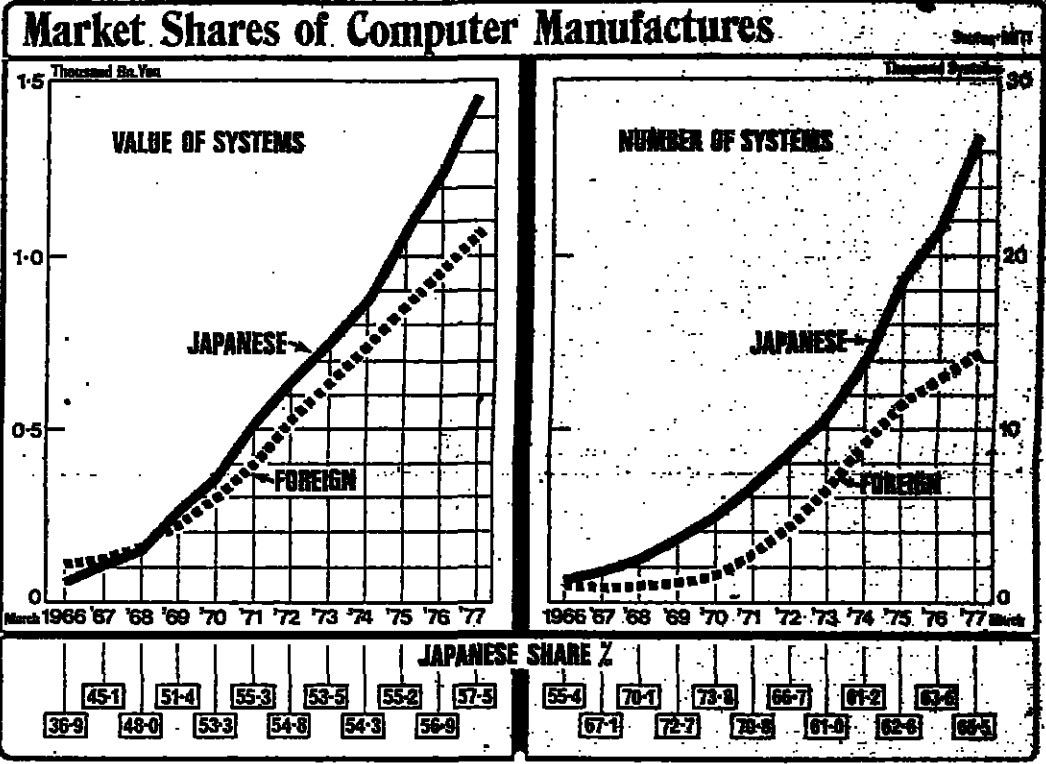
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**Exports**

The main advantage of both Fujitsu and Hitachi is that they are in a better position to build up exports than the group with computers made to an entirely Japanese-developed architecture which is not compatible with that of IBM. For the Japanese understood at an early stage that the export of computers would not be as easy as with consumer electronics, motor cars or even ships and steel.


The main reason is that computer systems must be intimately connected with the business methods and the operating philosophies of the companies they serve. A computer system is not analogous to a lump of hardware like a ship, a car or a television set, which can operate with perhaps minor modifications anywhere in the world. The computer system must be tailored very precisely to the needs of the customer, this requires, not merely an understanding of his business, but fluency in the language of the customer.

Furthermore, most computer users are tightly locked into the system which they already use, since a change is likely to mean expensive re-programming delay, and possible disruption of their business.

For these reasons Fujitsu and Hitachi decided to follow the lead of the IBM "plug compatible" manufacturers, which aim to sell machines in competition to IBM mainly to customers which already have an IBM installation.

Fujitsu, accordingly, forged a strong link with Amdahl the pioneer of the U.S. plug compatible manufacturers, by providing finance at an early stage in exchange for 28 per cent of the equity. Amdahl is now the main exporting outlet for Fujitsu in the U.S.

Last year, in addition, Fujitsu concluded a potentially significant agreement with Siemens in West Germany. Under this agreement, Siemens will market Fujitsu's larger machines as a complement to its own range of IBM compatible machines.



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THE COMPUTER INDUSTRY VII

# Fast-growing 'desk-top market'

THE RISE in demand for personal computers has astonished even the more enthusiastic manufacturers, so that the small, desk-top computer is now beginning to emerge as a highly important part of the industry. By 1982, Dataquest, the U.S. company analysts, predicts that the total market for personal computers in the U.S. will have risen to \$2.4bn a year compared with estimated calculators shipments of \$500m in 1978.

Only a few years ago the idea of a home or office desk computer was a mere twinkle in the eyes of a band of dedicated hobbyists and perhaps a number of professional engineers, eager to exploit the possibilities of programmable calculators, micro-processors and small mini-computers. But recently identifiable mass markets have emerged for products which are cheap, compact, and often have an extremely impressive amount of computing power.

Since the potential uses of very small computers are so varied, it is worth pausing to ask

exactly what a personal computer is. Dataquest defines it as "a small desk-top computer intended to meet business, professional and home uses. Typically, personal computer products in the study range from \$15,000 down to a few hundred dollars. Applications range from business record-keeping and professional problem-solving to educational aids in schools and hobby home uses."

Personal computers developed with inevitable technological logic from the potentialities of the micro-processor and the rapid reduction of the price of memories and other components. As soon as the possibilities of making small cheap computers was grasped, a large number of companies in different fields started to think about the possible uses for them. As a result, the market now presents a confused spectacle with several different strands interwoven.

The main categories of use for small computers overlap. They are: for small businesses,

professional engineers and scientists and the general public. Two further categories have been identified which in the long term are expected to be less significant, although both are showing a healthy market at present. They are educational users and hobbyists.

Dataquest puts its estimate of the potential markets in the U.S. for each of these categories in the adjacent table. The figures suggest annual growth rates of about 50 per cent in the business, professional and education markets, and a huge 167 per cent a year growth for home computing.

In view of the complexity and size of the potential markets, it is not surprising that several very large companies with different backgrounds are now beginning to show an interest. Texas Instruments and International Telephone and Telegraph (ITT) are among the largest companies shaping up to compete in the home computer market, although Tandy, Commodore and Apple are the main

competitors in the field at present. At the same time Hewlett Packard has established a leadership in the supply of the more complex type of equipment for scientists and engineers, while International Business Machines (IBM) is reported to have exported 5,000 desk-top computers valued at \$95m last year.

### Potential

Manufacturers are now converging on this fast-growing market from at least six different directions. First, there are the manufacturers of calculators, including Texas, Commodore and Olivetti, which are moving from the top range of programmable calculators, often including a printer, to make more versatile machines which are, in essence, computers. Then there are computer terminal manufacturers, which are reducing the size of their machines and adding to them intelligence and local memory. Eventually, some of these intelligent ter-

minals could become personal computers, especially for those who would like to link them to larger networks.

Third, consumer electronics companies are beginning to exploit the potential for adding a processor and memory ("intelligence") to the domestic television set to make it into a home computer. ITT in Europe, for example, is marketing the Apple computer as an adjunct to the television set.

Fourth, there are the hobbyist manufacturers which are moving into the do-it-yourself stage into marketing complete systems, usually to be plugged into a television set. Apple and Tandy's Radio Shack have both moved into the market from this route. Then there are the instrument makers, notably Hewlett Packard, which are bringing out desk-top computers, particularly for scientific applications, involving monitoring and controlling a range of instruments and performing calculations with the results. Hewlett Packard is also a maker

of programmable calculators, so that it is converging on personal computers from two related directions.

Last, there are the manufacturers of larger business machines, led of course by IBM, which certainly can be expected to make desk-top computers for the business market as soon as demand appears favourable.

Without doubt it is the enormous long-term potential for expanding sales to home users that is attracting the main interests of companies such as Texas and ITT. However, home and business use of personal computers probably will overlap to a considerable extent. A small businessman or shopkeeper, for example, may buy exactly the same unit as is used elsewhere for playing computer games in the home, learning programming or other educational purposes.

For example, Commodore, which has sold 25,000 units of its Pet home computer, estimates that 80 per cent have been bought by small businesses and schools, and the other 20 per cent by private users. The Pet is sold in hi-fi shops, alongside video-recorders and cassette decks, as another consumer toy, yet one of its main markets has proved to be for processing accounts and for teaching people the elements of programming.

There now seems little doubt that computers can be brought down in price to start at £200 or £300, low enough to compete for the disposable income of a large number of the population. But the question remains: what would the average household need a computer for? There are a wide variety of applications, which probably will split into three parts: educational uses, pure entertainment and, in the longer term, control functions within the household. It is also possible that complicated "artificial intelligence" programmes could be made available for

medical diagnosis, legal consultation and even "psychoanalysis" by home computer.

First, the educational uses can be divided between programmes intended to teach and develop computing skills themselves and programmed instruction in other subjects. Increasingly, people will want to learn programming, either as a pure recreation or for possible use in their working life. The home computer's capability for giving programmed instructions will also be used for many subjects quite unrelated to computing. Programmes for teaching mathematics, history and even languages will be developed, probably in conjunction with correspondence courses and institutions such as the Open University.

Second, the entertainment possibilities of home computers will be extended from television games to all sorts of information related to other pastimes, as, for example, data and analysis related to football or racing.

Viewdata computers can store programs as well as data, so that any home computer or a television with a computer attachment could obtain program packages for different applications. CAP-CPP in the UK has developed a system called "telesoft" based on its own micro-computer. Micro-cobol, which will allow the same program to be used on a large range of different types of micro-computer. The system is rather inefficient compared with programs especially designed for a mainframe or mini computer because a substantial part of the processing power of the home computer has to be used for the operating system. This leaves less computing time available to execute particular programs. However, in practice this is unlikely to be a disadvantage because computing power and memory is becoming so cheap that its cost is already less significant than the cost of programming. Moreover, in most business applications, the processing time is very small compared with the time spent putting in information or printing out the results. Consequently the relative inefficiency of this type of universal system will not be noticed by the kind of user for whom it is designed.

The prospect, therefore, is that a large library of programs could be built up which home users would be able to hire very cheaply. Many of these programs will be written in such a way that the user is prompted by a series of natural language instructions and questions on his television screen. Therefore he will need only the most elementary knowledge of computing to benefit from them.

How long will it be before home computing with all these uses becomes commonplace? The answer to that question depends on the speed and skill with which software is prepared and marketed, and also on the development of the communications networks for home computers which can be used at a reasonable price.

The market probably will build up from a core of self-employed people who have substantial needs for record-keeping and accounting in their homes, but before long it is likely that the flexibility and potential to use the machine for helping the education of children and adults will make home computers as common as hi-fi.

### Language

Third, home computers will be used to help household accounting, preparation of income tax returns, calculation of mortgages and as a convenient store for names and addresses and other data. Those who enjoy gimmickry will doubtless use the machine for switching lights on and off and controlling central heating, but most people probably will stick to the cheaper specialist gadgets for this sort of function.

The technology for all these applications is now being developed in the different Viewdata systems of which the British Post Office's Prestel is the first and the most advanced. Viewdata systems depend on linking modified television sets (or home computers) to a central computer data bank by means of the ordinary telephone network.

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## The importance of peripherals

THE COLLECTIVE noun "peripherals," which describes the equipment used in conjunction with a large computer, has become misleading in almost every sense.

First, the equipment—including magnetic disc or tape units for bulk memory—is no longer peripheral to the main operation of a computer system, but an integral part of it.

Second, the value of peripherals is now generally much greater than that of the central processing unit itself. And, third, many so-called peripherals are now being given computing abilities of their own so that they can operate either in a federal system with a large central processor, or in some cases as specialised computing machines.

In the U.S., the revenues from peripherals and terminals together account for nearly 60 per cent of all revenues from computer hardware (that is, excluding programming (software) and services). This picture is reflected in Europe.

Backintosh Consultants estimate that in 1979 the total com-

puter hardware market in the four largest countries, France, Italy, the UK and West Germany, will be about \$5bn. Of this about 70 per cent, or \$3.7bn, is accounted for by peripherals. Mackintosh also shows the substantial imbalance of trade in computer peripherals in Europe, with estimated imports by the four major countries expected to total \$600m this year.

This clearly reflects the dominance of the U.S. over many parts of the peripherals market despite European efforts to redress the balance.

The importance of so-called peripherals is especially emphasised in the new mini-computer based systems which are beginning to find a wide business market, and even more in the micro-computer systems which are following them.

Mini computers were designed originally for industrial process control and the main reason for transplanting them to business systems was that they were much cheaper than the larger machines they replaced.

Now computer processors are being etched on to a single chip

of silicon only a few millimetres square. These chips can be assembled with other circuits on to a single circuit board to make a complete mini computer for only a few hundred dollars. A complete system, however, costs thousands of dollars, mainly because of the peripherals which are required to make it carry out a useful task.

These peripherals can be divided into two broad categories: magnetic memory units and printers. However, terminals consisting of a keyboard and usually a television-like visual display unit (VDU) have to be considered in association because, in small systems at least, printers and even magnetic tape or disc units can be integrated into the terminal.

Magnetic discs are now developing in two directions. The smaller 5 1/4" floppy discs" have become steadily cheaper and more reliable, so that they are now beginning to displace cassette tape units on all but the very smallest systems. The floppy disc works in a similar fashion to the larger units, with

a spinning magnetic disc and a tracking head which can "read" or "write" on to any part of the disc and can move automatically to the required track.

Disc units have to be made with extraordinary precision to ensure that the head locates the desired track on the spinning disc.

The capacity of the larger 8 in discs has been continually increased, a trend which will continue as single-sided discs are replaced by double-sided ones. Currently these disc drives can store up to 370 megabytes of computer information (570m characters). That is equivalent to about 100m English words or a library of a thousand novels.

These units can transfer information to the central computer at a rate of between 800,000 and 1.8m bytes a second. The higher speed is the equivalent of about three large novels every second.

For larger bulk storage, magnetic tape units and magnetic drums are still used, although many medium-sized installations have no need to go beyond discs. In the next five years, magnetic bubbles will start to

make important incursions into the mass memory market, particularly in systems which have to be portable or must be exceptionally reliable. However, the continued improvements to disc units mean that bubbles are trying to hit a "moving target" in terms of performance.

The main development of printers in the next decade is expected to be the replacement of impact technologies mainly by ink-jet and laser Xerography methods. Print speeds are likely to continue to increase beyond the 200 characters per second achieved by the best matrix character printers today. The worldwide market for impact character printers is currently around \$60m, according to SBS Publishing of California, and will reach \$627m by 1981.

However SBS expects that, by 1985 only 30 per cent of high-speed printers will use mechanical technology. A description of one of the challengers, ink-jet printing, will be found in the article on office computers in this survey (page V)

	1978	1980	1982
Business .....	200	450	765
Professional .....	175	355	800
Home .....	35	300	675
Education .....	15	35	115
Hobby .....	75	85	75
TOTAL .....	500	1,225	2,430

Source: Dataquest.

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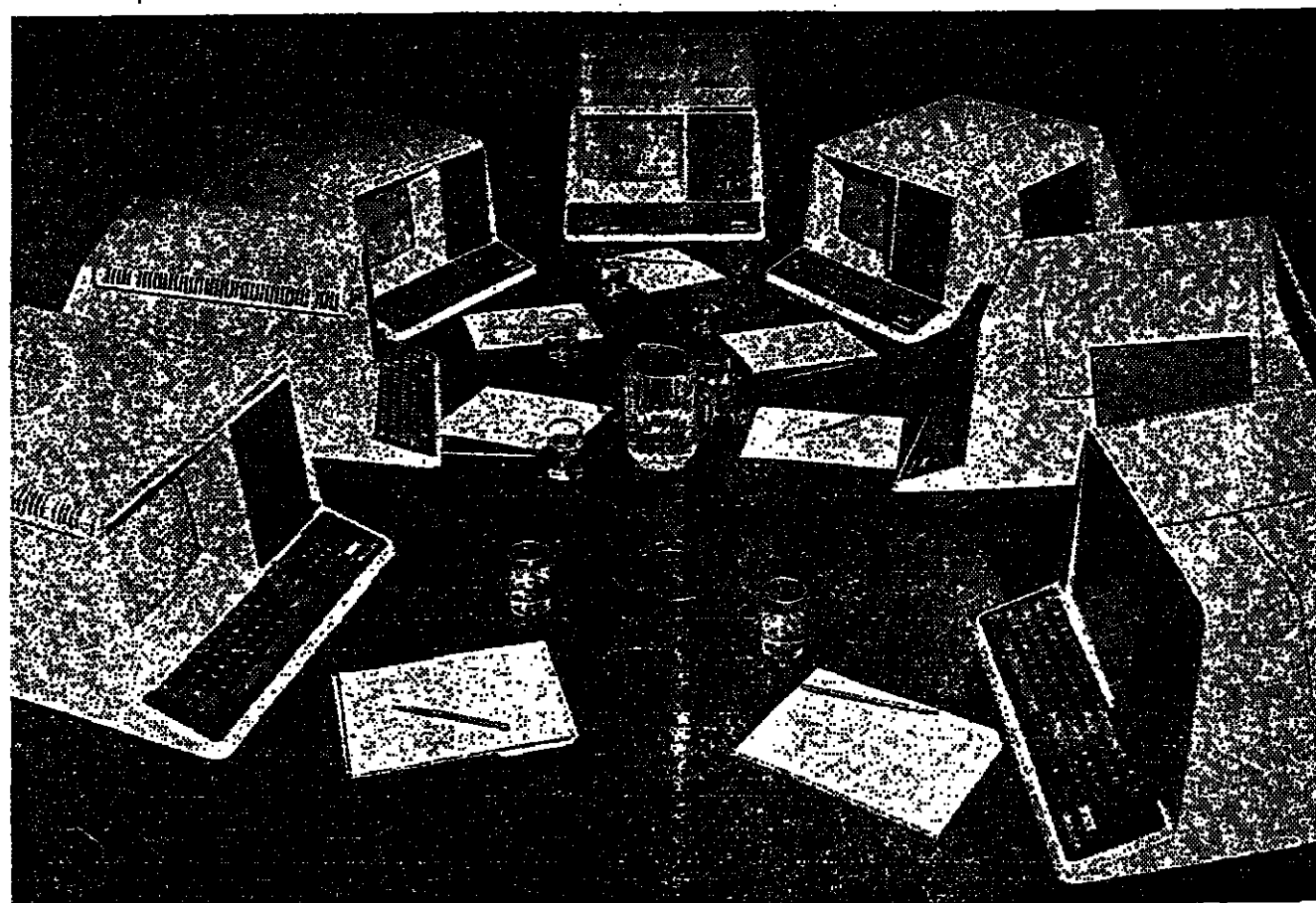
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# THE COMPUTER INDUSTRY VIII

## Smaller companies emerge

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THE PATH along which the present day general purpose computer companies have evolved is littered with impressively large skeletons.

General Electric, the Radio Corporation of America (RCA), Xerox and Philips are among the strong companies which tried to enter what they believed would be a crucial market in the new technological age.

But despite their financial strengths all of them failed, often very expensively. The reasons for their failures were diverse, but all had a common thread: the difficulty of financing a very high level of research and development, and efficient support and service organisation and rentals from a market where the margins were determined ultimately by the over-powering presence of International Business Machines. The companies which have survived the shakeout all had to demonstrate some extra qualities of management technology or marketing strength.

However, since the fall of the Titans, a new generation of relatively smaller companies has started to emerge as challengers of the established forces in the computer market. Having learned the lessons of the last decade, they are avoiding the pitched battle with IBM and the other established companies which would result from trying to offer a completely new range of large computers as an alternative system.

Since all the major customers now have large data processing installations in operation, it is

obvious that no completely new challenger could hope to prise much business away from established suppliers if a change were to involve all the expense and inconvenience of re-programming and transfer to a new system.

The new entrants into the computing market have therefore had two possible routes open to them. The first, taken by companies like Amdahl and National Semiconductor (in their different ways) has been to build machines which operate from an external point of view like IBM machines. It is possible for the smaller companies to ride on the crest of technological developments, of semiconductor components faster than IBM can. They have therefore been able to offer computers and add-on memories with substantially better performances and lower prices than IBM. By agility, they have kept ahead of the giant and obtained a most respectable slice of the market.

The other route for aspiring entrants to the computer markets was opened by the development of the micro-processor at the beginning of the decade. Simple micro-processors have been developed in the last two years into sophisticated micro-computers consisting of only a small number of components on one or two circuit boards. The semiconductor companies which were making the components, quickly realised that their customers which were putting boxes round the electronics and

marketing them as office systems, were adding a very large amount of value and profit.

At the same time as technological advance was increasing the complexity of components, the price was being driven inexorably downwards. The component suppliers foresaw therefore that they would be pushed further and further into a corner in which they would be supplying a shrinking proportion of the value of total systems.

Most of the major companies have therefore started to move into the computer market itself, starting with relatively modest micro-computers, mini-computers and office systems. In all cases, the logic of this move has forced the companies to place a greater and greater emphasis on developing total systems including software.

### Emphasis

These semi-conductor companies will not generally be in a position to challenge the systems capability of the large mainframe companies for a long time if ever. Nor, probably would they wish to. The general shift of emphasis in the market towards networks of smaller machines, each with considerable local processing power, is providing ample opportunity for the newer entrants to challenge the power of the big battalions.

Intel, Fairchild, Texas Instruments and National Semicon-

ductor have all entered the mini-computer market, and are all developing strategies for an attack on the office systems market. Motorola is alone among the largest semiconductor companies, in having as yet announced no plans to move into the sale of minicomputers. Its policy so far has been based on the idea that, as a component supplier, it should not compete with its customers, the computer makers. However, in the face of strong competition from almost all its rivals, Motorola is being forced into a serious review of its position.

Among the latest contenders, National Semiconductor and Hewlett Packard are, perhaps the most interesting, although the impressive strength and determination shown by Texas Instruments must never be underestimated.

National Semiconductor is attacking the market with great vigour from two directions. In 1975, it bought a small company called Exsyc, which had been started by a breakaway group of ex-IBM engineers to make IBM compatible mainframes. Only a year later, it had shipped its first system to Intel, the computer leasing company. Now National has shipped about 200 machines, employs 400 people on this side of the business and is planning to double the size of its plant this year. Even more significantly, it is working on the development of a machine which will emulate the largest IBM computers.

At the same time, the com-

pany has developed an office system called System 400, which is also IBM-compatible, but which is designed to sell on its own merits in the large and widening market for small systems. Although National is expecting to achieve sales in its computer division of \$200m in the next year or so, it realises that it is engaged in a win or lose race to achieve "critical volume" before it is overwhelmed by its competitors. By the phrase "critical volume" it means sales of \$400m to \$500m, the minimum needed to sustain the research and support network required for a viable computer operation.

Another example of a semiconductor company which is moving into computing is Texas Instruments, which is developing its own family of mini-computers and micro-computers. Fairchild is aiming to win a stake in the IBM-compatible market through its 30 per cent stake in Magnuson. Meanwhile, Hewlett Packard is moving into the computer market from the different direction of scientific instruments and calculators. It has designed a complete office system which is certain to be a strong challenger at the lower end of the market.

### Designs

Similarly, Dutch Philips, TTT, the General Electric Company (UK), Siemens of Germany, and Olivetti of Italy, and several other large companies have designs on the office market. Although the computers which they will be selling are small by present-day standards, it must be remembered that they are the size and power of large mainframe computers of only a decade or so ago. The office sector of the market has some special characteristics which are dealt with elsewhere in this Survey.

In addition to the semi-conductor companies which are moving into computing, the larger corporations converging on the office market, and the IBM compatible manufacturers in the large mainframe market, there are the software companies, some of which are now beginning to emerge as significant independent forces in the market.

This is a result of the continuing trend for hardware (machines) to become ever cheaper, while the cost of pro-

gramming (software) continues to rise. Software now represents well over half the cost of many complete systems, and in a few years' time it may be three-quarters or more, according to some estimates. Consequently, software houses which have designed a system for a particular application, particularly a complex system, using standard mini-computers, may buy in hardware for resale in a complete systems package. From this point, it is a comparatively small step to start manufacturing some of the hardware to adapt the system for special purposes.

Logica and Systems are two British examples of software companies which have followed this route.

Thus, new companies have entered the computing market from several different directions. Taken together, they make the choice very much wider for a prospective purchaser than it was a few years ago. The Diebold Research Programme, for example, estimates in its Research Report E167 (Diebold, 5/8, Argyl Street, London W1) that a typical larger company is now dealing with about twice as many computer vendors as it was 10 years ago.

The cost and complexity of developing then operating systems for large mainframe computers is likely to prohibit even the largest companies outside the computing industry from trying to force their way back into the market. Indeed, the forces which caused the demise of RCA's General Electric's and Xerox's computing operations are as potent as ever. On the other hand, the rapid developments of technology, allowing enterprising companies to find many profitable sectors of the industry without confronting the largest companies head-on (even the plug-compatible manufacturers are only competing with IBM hardware in selected parts of its range).

On the other hand it is very likely that industry will see the entry of some very big companies indeed over the next few years. The giant AT and T could, for example, become an important rival to IBM if it were to obtain a change in the regulations which prevent it from competing in the computer market. If that should happen - and it is still a large "if" - well, anything could happen.

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## Unemployment debate lacks information

THE DEBATE about the employment consequences of the so-called micro-electronics revolution has not yet reached anything like a serious level. So far, there is very little to go on: Government reports and Ministerial speeches by and large content themselves with the view that those who predict terrible consequences are "exaggerating." Trade unions or academics, suspicious of the technology, tend to magnify the suddenness - if not the size - of the impact.

It may be that even after the next four or five years, when the technology has had time to impinge itself upon working life and labour demand, no one will be any the wiser about its total effect, or any more able to make predictions.

What is much more likely is that a number of case histories will have been built up; and it will be more possible to say, for example, whether the automation of clerical office work normally means a net job loss or not.

Ignorance of the outcome does not entitle the official training agencies, employers or trade unions to stand by helplessly while the changes occur. It is to the Government's credit that it has done so much to encourage debate about micro-electronics and started to spend money on special training programmes to find the personnel to manage the technology.

Part of the £100m that the Government has set aside for the industry over the next three

years is to go on training another 3,000 computer software experts by the autumn of this year.

Some of the trade unions, too, have begun to teach themselves about micro-electronics and to devise policies for coping with it; that process is certain to intensify. For the moment the lack of real information has left them with little choice but to prepare for the worst, despite official declarations that there is no sign of an employment holocaust.

### Attitude

The official attitude is summarised by the Central Policy Review Staff, in this extract from its report on the social and employment consequences in November last year: "We have yet to be convinced that micro-electronics will be a major factor for the worse, unless the general prospects for employment make for increased unwillingness to accept technological change."

The report said those who had predicted substantial unemployment - figures of 3m to 5m have been quoted - did not back their forecasts with convincing analyses. They also tended to overestimate the speed at which traditional jobs would be displaced by the new products. Furthermore, said the CPRS, the last "computer scare" proved a false alarm: there were in many places (such as the civil service itself)

net job gains after computerisation, although the rate of increase in employment was probably lower than it would otherwise have been.

The CPRS also takes the somewhat optimistic view that technological change has always been associated with higher economic growth and rising real incomes. "This could be equally true of micro-electronics," it says.

Although microchips would mean higher productivity - less workers to produce the same output - there would be a new range of cheap, mass-produced goods and new services that would stimulate employment generally.

But the CPRS report qualifies its cautious optimism in one or two passages in such a way as to sound a serious warning. First, it points out that there will be, whatever happens, a serious employment gap in the 1980s, for demographic reasons. Britain is trying to find jobs for large numbers of new entrants to the labour force already, quite apart from trying to prevent the loss of its industrial base.

Secondly, it notes that Britain has been relatively weak in the past in exploiting new, cheap, mass-market products: and it is from exploiting these markets that much of the employment growth would have to come.

Thirdly, it warns - as do all the reports that have come from Whitehall in recent months - that the consequences of not

adopting the new technology rapidly will be far worse for employment than any of the consequences of adopting it.

These two latter points explain the considerable scepticism with which the CPRS report has been received by trade unions. Unions such as the Association of Scientific, Technical and Managerial Staffs and the white-collar section of the Engineering Union, TASS, have seen much evidence of decline in traditional UK manufacturing industries in recent years to be less than sanguine about the extent to which new technology will halt that decline.

Broadly speaking, they find the CPRS view a complacent one. They doubt that the analogy with the computer revolution is a fair one: computers were, and are, expensive pieces of capital equipment. Employers have taken their time in introducing it. But microprocessors are cheap and allegedly all-pervasive.


Unions argue that companies will quickly be able to calculate their savings in labour costs when the microelectronic equipment is brought round by the salesman.

U.S. experience of the automation of offices seems to suggest so far that employers are attracted more by the sheer productivity gain than by any saving in staff: but the theory is little tested - there - and in Britain scarcely at all.

More obviously, there is the

CONTINUED ON FACING PAGE

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THE COMPUTER INDUSTRY IX

# Cost is makers' dilemma

COMPUTERS HAVE progressed marvellously in recent years, computing has advanced hardly at all. Today's machines are smaller, cheaper, more powerful and more reliable than their predecessors, often by orders of magnitude, yet these benefits derive from increasingly sophisticated micro-electronic circuit fabrication techniques and economies of scale in manufacturing rather than any fundamental changes in the way computers compute.

In fact, according to Glenford Myers of the IBM Systems Research Institute, New York: "Except for a few machines, for example some of those made by Burroughs Corporation, there have been no advances in the computer architectures of current systems since the 1950s."

What is more, there is little demand among computer users for such advances. Such is the size of the investment users have made in existing conventional hardware and software that there is no real prospect of radical change in the foreseeable future.

Nobody is anxious to repeat the experience of 1964 when IBM launched the System 360 series. Although a remarkable technical advance, it involved users in time and expense because programmes had to be rewritten to run on the new machines.

So computers will continue to get smaller and cheaper but if there are remarkable technical advances they will be well hidden from the user. Therefore, the question of future trends in computer technology can be seen as: what are the realistic limits of miniaturisation, and how will computer manufacturers respond to the problem of selling equipment which is becoming worth less and less very rapidly?

We are very far from the limit in micro-electronics. The silicon chips which lie at the heart of computer memories and processors are fabricated at present using optical methods and visible light to print patterns on the surface of the silicon. The practical limits using such techniques are close to being reached, although with further refinement it should be possible to use visible light to create a chip with the complexity of the 64K RAM—64,000 individual units of memory on a single chip.

## Proven

X-rays or electron beams can be used to create even smaller elements. IBM scientists have already created a wire with proven electrical integrity with a diameter of only 150 Angstroms (half of one millionth of an inch). However, there are those who believe that for all practical purposes, the limits set by visible light are adequate.

For example, Iann Barron, director of strategy for Immos, the NEB-backed micro-electronics venture, believes that the 64K RAM level of complexity is adequate to build a complete "computer-on-a-chip" processor, memory and connections to the outside world—and it is this that he sees as the key technological development. He thinks it is so important that to describe it he has coined a special name, "transputer," derived from transistor and computer.

But whether semi-conductor companies stick at the level of the 64K RAM or invest time and the considerable resources necessary to achieve greater complexity on the chip, there is no doubt that the power of computer systems will continue to go up, while the cost will continue to come down. It is generally reckoned that the improvement in cost performance is doubling in less than five years.

Or to put it more graphically, George Chubb of Sperry Univac calculates that in 1960, the cost of one man-hour of labour would buy the execution of 1.4m instructions or the storage of one megabyte (8,000 individual items) of data on direct access storage for two days. In 1977, Chubb's estimate of labour would buy the execution of 225m instructions or store one megabyte of data for 15 weeks.

Another equally graphic illustration is the 4300 series which IBM released only three weeks ago. Data processing specialists are still arguing over whether these machines represent simply a stop-gap or a whole new series. What is certainly true is that they are stunningly cheap and cost effective compared with existing products. For example, the top-end 4341 processor runs at about 1.7 times the speed of the existing 370/148 but the complete system costs only about as much as a 370/138.

The dilemma for IBM—which supplies about 70 per cent by value of all the computing machinery in the world—is how to make money out of it which regularly halves in performance while halving in price. All other manufacturers, if they are to stay in the game, are in the same boat.

There is a view that IBM and other manufacturers are waiting

Rank	Company	Estimates for 1977			Reported data		
		DP revenues \$m	DP revenues (% of total revenues)	U.S. DP revenues (% of total DP revenues)	1977 total revenues \$m	1977 net income \$m	Number of employees
1	International Business Machines	14,765	81	50	15,123	2,719	310,155
2	Burroughs	1,844	87	59	2,127	215	51,295
3	NCR	1,574	62	51	2,522	144	64,000
4	Control Data	1,513	66	55	2,301	63	46,000
5	Sperry Rand	1,473	45	59	3,270	157	85,684
6	Digital Equipment	1,059	100	64	1,059	109	36,000
7	Honeywell	1,037	36	63	2,911	145	75,840
8	Memorex	405	90	60	450	56	8,823
9	Hewlett-Packard	402	30	54	1,360	122	35,100
10	TRW	350	11	77	3,264	154	87,152
11	Kel	285	71	50	402	32	3,900
12	Data General	255	100	65	255	29	8,590
13	3M	240	6	80	3,580	413	80,000
14	Automatic Data Processing	238	97	82	245	23	8,000
15	Xerox	209	4	100	5,077	407	103,977
16	General Electric	200	1	80	17,519	1,088	384,000
17	Amdahl	189	100	81	189	37	1,700
18	Computer Sciences	176	75	30	235	12	7,300
19	Storage Technology	162	100	82	162	11	3,985
20	Texas Instruments	160	8	90	2,045	117	68,521

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for people who spend £5,000 today on equipment that would have cost £50,000 five years ago to discover that they cannot make it work—and then make their money through selling the necessary software.

Software—the programs which run the computer and run the applications loaded on to the computer—is the single element of computing systems which is not declining in price, but in fact, relative to the price of hardware, becoming more expensive. With unbundling, the separate pricing of hardware and software, it is expected that manufacturers will make their money out of providing the software to run their hardware that will cost

relatively little. Murray Laver, former board member for technology for the Post Office, describes this as "zero cost data processing." He also describes software as "pure crystallised labour."

## Cumbersome

There are suggestions that with its 4300 series, IBM will move towards the total unbundling even of operating software—the software that runs the computer system. But above all, 4300 series points to the computer room of the future. In the past, computer rooms were vast, custom-built

affairs with false floors to hide away the bundles of cables which shackled the machines one to another and water-cooling equipment to remove the heat built up during processing.

Eugene Amdahl, formerly IBM's chief computer designer, showed the way round these problems with machines compatible in terms of software with IBM but using advanced technology. He was able to air cool his large processors rather than use cumbersome water coolers.

The 4300 series points the

way to medium-sized machines which fit unobtrusively into the ordinary office and which require no special fittings. It means, for example, fixed disc mass-storage devices which are relatively tolerant of poor operating environments and an end to tape storage (which is not), though there are those who wonder how a security back-up can be provided without a tape fall-back.

Considerably research is already being carried out in reliability of computer systems and it is perhaps no coincidence that in the past two years the

British Computer Society's Awards for technological advance have been won by projects in this area. In 1977, there was Prof. Brian Randall's work at Newcastle on systems which recover from failure and in 1978 Dr. Roger Needham's work at Cambridge on the CAP projects, a machine and an operating system proof against accidental or malicious damage.

Computer systems of today work in a linear fashion, that is they process instructions one after another in the manner of a model first set by John von Neumann, one of the fathers of modern computing. There are a number of research efforts in progress to improve on this scheme of things. At a number of British universities, researchers are attempting to implement "dataflow architecture" where there is a network of machines through which data flows. Processing occurs when data arrives at the strategic points.

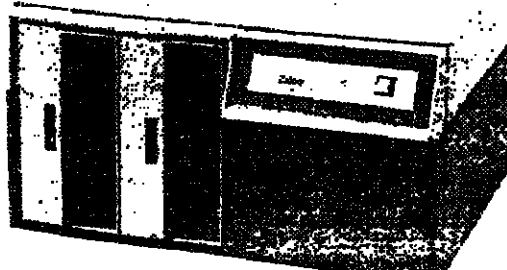
Then there is the brilliant ICL-distributed array processor in which processing elements are intimately associated with memory, making possible parallel processing.

It is intended for very large processing problems—meteorology and the like—and is used with ICL's biggest computer, the 2980. But returning to the original point of users' dislike of change, there is no doubt it could be used for simpler things, and Ed Mack, ICL's director of product strategy, would love to see it used to run a payroll.

Alan Cane  
Editor, Computing

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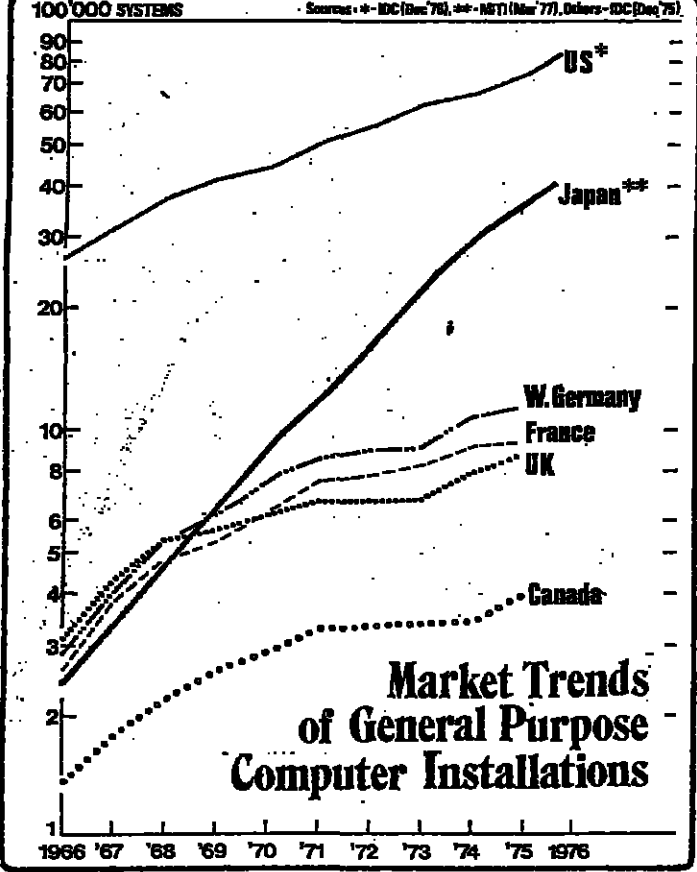
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## Employment

CONTINUED FROM PREVIOUS PAGE

possibility that many of the jobs created by micro-technology will not be in the older industrialised nations, such as Britain, that are looking for industrial regeneration. In other words, much of the displacement of labour could be in the form of job exports—traditional manufacturers failing in the West and the new manufacturers springing up in the Third World.

Thus, the net job effect may be a positive one, but will it revive struggling industrialised nations such as Britain? Any worker displaced by cheap imports of textiles, motorcycles, television sets in recent years will take a pessimistic view of Britain's ability to seize and hold new markets. Incidentally, the suggestion that the cold shower of competition will invigorate British industry is no longer fashionable—perhaps because the cold shower signally failed to have the right effect when Britain joined the European Community.

## Rapid

Today's prognostications are less joyfully worded, a very large conditional "if" is attached to every forecast. For example, the latest Treasury bulletin on the economy, devoting its main article to micro-electronics, has this to say: "In both manufacturing industry and services there will be job losses due to higher productivity or the outdating of existing products; and in some cases these effects will be substantial and rapid."

But against this, jobs will be created in the production of silicon chips and in software systems and applications. Early replacement of plant and machinery with new equipment

incorporating micro-electronics will create extra jobs in the capital goods industries provided they can beat the competition from imports.

It is this proviso about British competitiveness that must cause serious misgivings. Certainly much of the official doctrine of the TUC and the "alternative strategy" of the Labour Party Left-wing is based on the theory that British industry has simply fallen in the past to rise to the occasion, and that a centrally planned economy, initially protected by import controls, is the answer. If this is a protectionist philosophy, how much more so will it seem once the great international trade in micro chips and products gets under way.

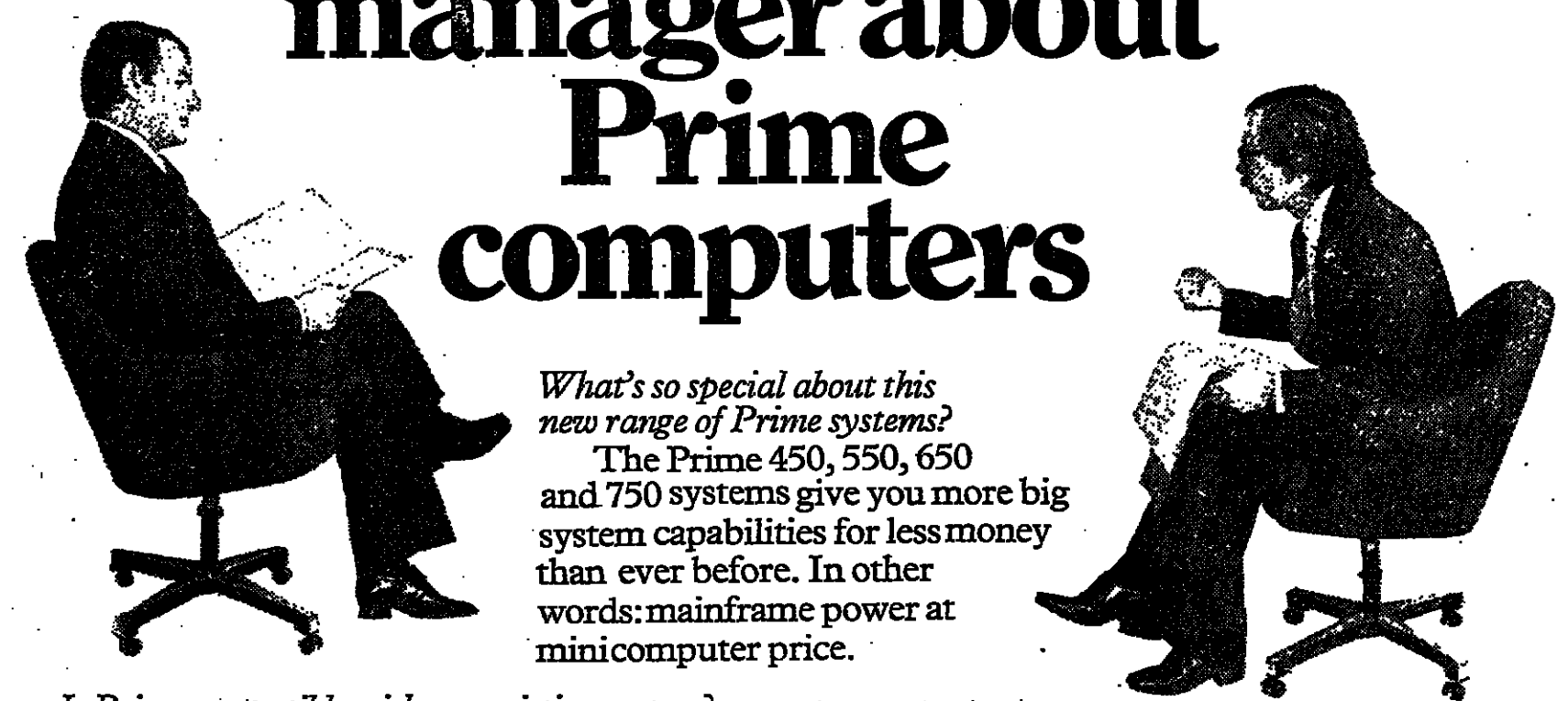
So far, official trade union pronouncements have been careful to avoid the charge of short-sighted conservatism. The new technology is welcomed, provided that strenuous efforts are made to deal with the indisputably difficult transition.

Some unions see the logical consequence of higher automation to be shorter hours, or weeks, or working years. Some take an apocalyptic view, others have no view at all. There can be little doubt though, that trade unions themselves will influence the rate of change by the extent of their opposition at local level to new automation.

It is in everybody's interest that the unions—not the civil servants of Whitehall—direct the technology and take some view about its effect on jobs. Someone will have to organise the change if it is to be peacefully conducted: a defensive and passive trade union reaction will probably only be avoided if workers have a real say in the process.

Christian Tyler

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THE COMPUTER INDUSTRY X

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AT STANFORD University in the sunny valley between the Pacific and San Francisco bays, some 200 postgraduate students are working on the problems of how to make computers artificially intelligent.

Work on the project is now so far advanced that many hard-headed companies are beginning to take more than a passing interest. Indeed they are so interested that they are offering large salaries to the best students to tempt them into corporate research laboratories.

In several other university centres and in the research departments of large corporations like International Business Machines, a ferment of activity has been generated by the possibilities of using "artificial intelligence" in the commercial world.

This may seem strange, even implausible, to those who have a nodding acquaintance with the series of failures encountered by researchers into artificial intelligence during the last few decades. Even some of the apparent successes, have seemed to demonstrate the inherent limitations of computer programming as a simulation of the methods of the human brain.

One colourful example was the programme called ELIZA, developed by Professor Joseph Weizenbaum at the Massachusetts Institute of Technology, to simulate psycho-analytic sessions. The computer was so good at "psycho-analysing" its "patients" that Weizenbaum discovered that many people regarded it as almost human, and even requested private interviews with it to give confidential information and receive support. The computer program, of course, showed endless patience in asking questions, and was cleverly designed to remember some of the patient's answers and bring them up later in the conversation.

When the program became generally known in 1968, Professor Weizenbaum found to his horror that many competent medical authorities were recommending that ELIZA, or computer programs like it, should be widely adopted in hospitals and clinics as an aid to the treatment of patients. However, the creator of this Frankenstein therapist knew that his program was in a very fundamental sense a fraud. The ELIZA program did not even have an "understanding" of natural language, let alone of the intricate human problems which it was supposed to be asking questions about.

As Weizenbaum explains in his book "Computer Power and Human Reason" (Freeman and Co., Reading) the program depended upon a series of clever "tricks" which enabled certain words or phrases to trigger off seemingly intelligent responses from the computer. Weizenbaum

had in fact chosen the psycho-analytical model for his program because it provided a context in which words are used rather vaguely and in which the computer could always issue a vague prompt like: "Give me an example," or "Tell me about your father," when stumped for an answer.

For this reason, the ELIZA programme could not be transplanted outside psychoanalysis without producing ludicrous results. Similar objections applied to many other and more sophisticated attempts to simulate certain aspects of human behaviour. A programme called PARRY, for example, was developed by K. M. Colby which gives a very passable imitation of a paranoid patient under interview. However, one of the reasons for the success of this programme is that whenever the questioning becomes so keen that the computer gets out of its depth, it can simply revert to one of the ideas fixes of the assumed paranoid personality.

PARRY, like ELIZA, demonstrated, in some respects, the limits of possible understanding by computers. They showed that computers can manipulate language plausibly in certain limited contexts, but they cannot "talk" sensibly unless they have a thorough grasp of the subject matter under discussion. For that reason, much of the linguistic analysis which has

been undertaken by artificial intelligence workers, although interesting in itself, is considered by many researchers to be leading up a blind alley.

This point was emphasised by a spectacular programme written by Terry Winograd and described in his book "Understanding Natural Language" (New York, 1972). The programme called SHRDLU enabled the computer to direct an artificial hand by means of a television camera eye to change the positions of a number of boxes and pyramids on a table. Moreover the programme was able to respond to commands in natural language, like "Move the red pyramid onto the larger red box." It could deduce the sequence of manipulations that were necessary, including the moving of other objects in the space. It could describe what it had done, explain why and give a complete account of the configuration of all the objects within its field of view.

Even more interestingly, the computer could learn new concepts within its limited world. For example it could learn that a pyramid placed on a box represented a "steepie" and could learn the syntax of ownership: "This steepie is mine. That one is yours." Furthermore the computer was able to make quite complicated inferences. On the command "Put it down," for example, SHRDLU was able to deduce from the previous context which object the word "it" referred to.

Programmes similar to SHRDLU have been developed for industrial use, but usually their purpose is mechanical manipulation or assembly rather than intelligent thinking. From the point of view of artificial intelligence research, the SHRDLU experiment showed that a computer could indeed behave as intelligently as a human being in an extremely limited conceptual framework. When SHRDLU is transported out of its tiny world of coloured blocks and pyramids, however, the programme is completely unable to cope.

The conclusion which was reached by Winograd and by other workers is that development of computer intelligence should start less from an effort to reproduce generalised intelligent abilities, but from a very clear definition of a relatively limited task within a certain field of knowledge.

From this perception has developed a range of so called "expert programmes" whose aim is to simulate the analysis and advice which would be given by a human consultant when faced with a specific problem. One fruitful area is medical diagnosis, where expert programmes are already proving to have good performance when the results of their diagnoses are measured against the opinions of live consultants.

One of the most fruitful of the modern approaches is through what is termed "rule based programming." This means that the computer programme is built round a set of rules, which the computer calls into play rather in the manner of a bureaucrat in a civil service department. The application of one rule will trigger the use of another rule, which will in turn bring other rules into the program. The computer will work methodically through the structure set out by the programmer, but because of the rapidity of its operation, the route it will take could not easily be predicted by a human in advance.

Once an expert programme has been set up, it can be applied with some modifications to different fields of knowledge. It builds up its detailed armoury of facts and methodology by first interviewing a real live expert.

In the case of geological testing for oil, for example, the computer will ask the live expert about all the physical and chemical tests which should be made, the order in which they should be made and the further tests needed, depending on the results obtained. Then finally it will ask how to assemble the results to predict the likelihood of finding oil and its whereabouts.

When the computer expert program has obtained and codified all the information which it needs from the human expert, it is ready to give consultations. An oil company prospecting for oil would, for example, be taken through a routine of question and answer by the computer on the tests which had been made, and would then make a prediction about the likelihood of striking oil.

Although the computer program can never display genius or intuition, it does have the

## Possibilities

advantage over a human expert that it is tirelessly methodical and never forgets even the slightest scrap of evidence which it has been told. In very specific applications, therefore, the computer program may be as reliable as a human and usually much cheaper. Similar programs are being developed for military applications where they may be able to give extremely rapid up-to-the-minute assessments of the resources of arms and men available to a commander in a particular theatre of war, and even to make an assessment of the tactical situation which faces him.

One of the main tasks at present is to devise systems which will allow non-computer experts to ask the system unexpected questions which would normally be handled by an intelligent aide. For example, a general may wish to ask "what if reinforcements are delayed two hours?" The computer must reply with the consequence for supplies of ammunition, food, communications, and probably much more besides. The general may not be satisfied, however. He may want to ask: "How did you reach that conclusion?" An intelligent aide could answer that question whereas many computer programmes could not. However, the application of rule based programming allows the computer to tell the general which rules were applied in reaching the conclusion. From this he can estimate the assumptions, and perhaps test them by asking further questions.

From this an "intelligent" conversation can be built up, and although the computer would never show the dash and inspiration of say, Napoleon, it might have given him some useful cautions on the logistics of marching to Moscow.

Such systems are now beginning to emerge into commercial significance, largely because of the continual fall in the costs of computer processing power and memory. Applications in law, accountancy, medicine and indeed in most professional fields are opening up.

These systems are a long way away from the general purpose humanoid robots of science fiction. But some of the systems look sufficiently life-like to give serious pause for thought.

M.W.

# Europe lacks a united front

CAUGHT BETWEEN the need to be gentle with powerful implanted offshoots of multinationals and the ever-present threat from Japan, Europe's officialdom, and senior civil servants in the various member countries in constant contact with Brussels, have yet to present anything like a united front in the computing industry.

True, great advances have been made so far as the service bureau and software industries are concerned. But these are manufacturer-independent and brain-intensive to a high degree,

and there is the rub. As soon as a hardware producer, especially in these lean times, can claim to show that government or supra-national authority actions are threatening him, or even hampering him, then he will win a hearing and will be able to bring powerful lobbying action to bear.

Last year's report and plan for action in advanced components prepared by Mackintosh Consultants primarily for the German Government, but consulted by all European authorities, has had little or no effect towards producing a Common Market approach to the data processing problem, despite the crucial importance of advanced components for the development of processors and their memories, as well as the discs, printers and tape decks which serve them.

As in the early days of computers, the approach remains narrowly nationalistic and no one in Government appears to be prodding "national" companies to seek European bedfellows—the trend has been, and still is, to conclude some form of alliance with an American partner despite the difficulties and dangers of operating in that market.

This is not to underestimate the difficulties of planning and executing a European-wide approach to an important problem—indeed the experience of the Comecon countries with the much-delayed Riad series of computers made in several of the Eastern bloc nations, but co-ordinated from the USSR, shows how difficult a multi-country approach can be, despite the tighter planning control possible throughout Comecon.

Failure

It would be wrong to blame the Eurocrats and dishonest to attribute the failure of European ventures entirely to Gallic pride. Both major parties in Britain must take some responsibility for the failure of at least two European-oriented proposals.

ICL was on the point of acquiring or merging with Machines Bull with a dowry, or purchase price, of about £90m just before the advent of the last Heath Government. But as ICL (Industrial Reconstruction Corporation) was a stigma to the Conservatives since it was a Tony Benn brainchild and as IRC was the marriage broker, the project failed.

And who, under the Wilson Government, prevented the close association between ICL and Unidata (Philips-Siemens-CII) that would have made of that group the European and international force it never became?

True, ICL management had come to fear and detest mergers, with good reason. But ICL would have been by far the most powerful partner in the grouping from the areas in Europe spending the most on computer installations and applications, would have enjoyed a "captive" market comparable in some degree with that provided by the U.S. Government through General Services Administration.

It is still not too late to achieve greater unity of purpose. The justifying figures for such action are there for any politician or civil servant to consult. Whether they are culled from forward computer projections, or from growth of micro-electronics, the inference is the same. In the latter case, it

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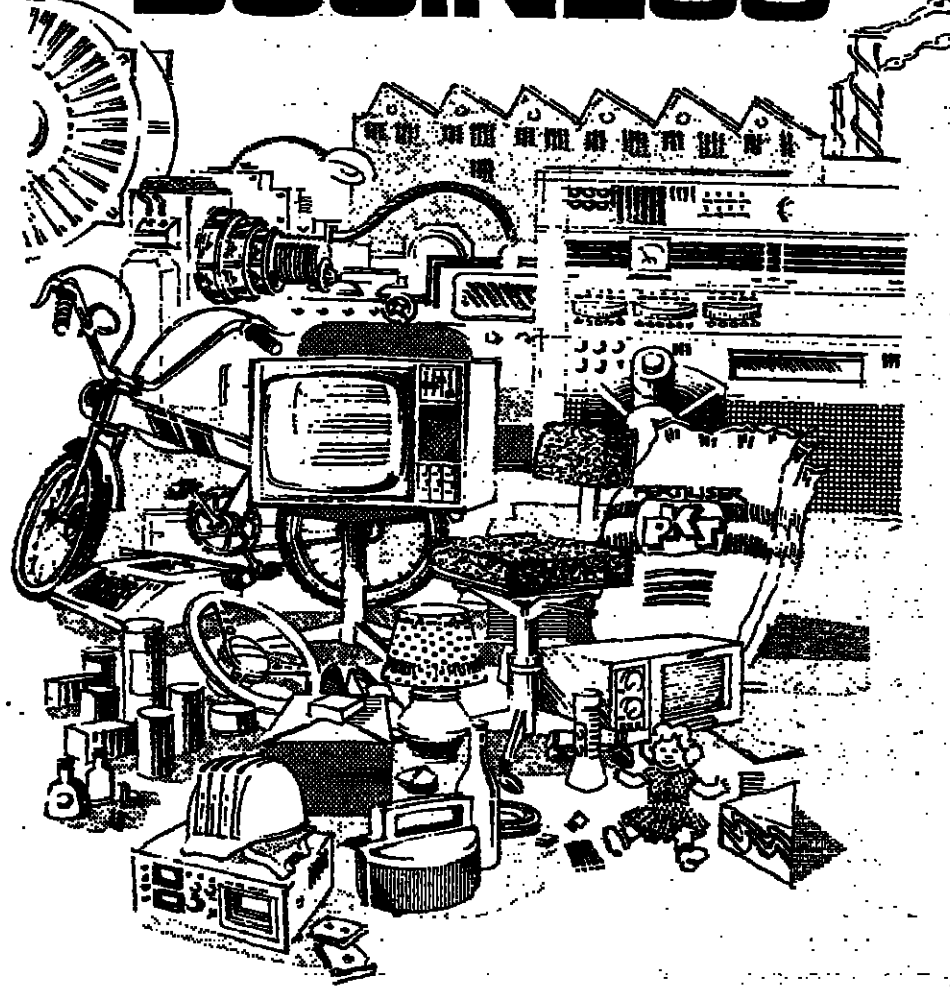
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## THE COMPUTER INDUSTRY XII

## Increasing demands for security

THE HUMBLE telephone has created a series of troubles for businesses in relation to confidentiality.

The most common problem stems from masquerading. After inadvertently revealing bank account balances to credit checking agencies, the banks are now more careful.

The general method of reducing masquerading to minor proportions starts with the "calling back" routine. In this step, the information is not given at first request, but is only revealed when the proper registered telephone number of the alleged caller is rung back, and it is then established that the information is, indeed, being requested. This measure does not prevent all masquerading, but it helps to reduce the problem. It is due to this type of common difficulty that the world of business understands the necessity for computers to adopt similar practices when interrogated by remote terminals.

If a computer system using remote terminals holds valuable data, then it is now standard practice for terminals to be "called back" in this way to prevent fake terminals masquerading as real terminals.

Having decided that the central computer is firmly connected to a real terminal, it is probably safe to allow searching and retrieval from the files. Well, nearly safe, but first the transmission link must be protected by the encoding of the transmitted dialogue.

This encrypting can be useful to protect against any eavesdropping on the circuit, but it cannot be used as the sole method of protection. For encryption by itself tends to reinforce the credibility of an inquirer who uses it and so makes a security penetration much more dangerous, unless it is supported by other rules and procedures.

A plain language telegram from a business agent can be regarded with scepticism, but if it is encoded correctly, then the firm to which it is sent may give the message uncritical acceptance and this encrypting trap must be avoided by computers in use through networks as a source of information.

Expressed in the language of business, this problem is referred to as the authentication aspect of computer executed transactions.

Two sides of this job can be

clearly seen—the first existing when the parties are in live contact through the computer network, and the second when the parties are using the network as a postal type delivery system, so that sending and receiving occur at different times.

The literature of specialist studies in this topic is growing, almost by the hour, and some side-effects of this encrypting interest have become very apparent. For only a few years ago the career of any specialist in coding theory was likely to be made either in the university world or with defence establishments.

### Serious

Suddenly, in recent years, the safe transmission and reception of messages from automatic banking terminals, building society pass book terminals and other samples of electronic methods of filing and accounting has become a serious issue.

Now these major commercial organisations, and the suppliers of computing networks in either equipment or design fields, have a brand new set of career openings for what was formerly an esoteric subject—cryptography.

Traditionally, an elaborate encrypting method was devised and connected to individual use through the selection of a secret key. Given that the key remained a secret, any use of the key gave an assurance of confidentiality and genuineness for messages passed this way. It is still believed that there is much to be said for this approach, yet, in addition, there has been devised a new set of schemes for coding which use two keys—one of which is public and one secret.

Basically, the public key is used in transmission and the secret key in reception—the theory is that knowledge of the public key gives no clues away to the make-up of the secret key.

However, many problems still need examination in using either system. For instance, in the two-key system, when the secret key has been undermined in some way, an organisation will need to change both keys. This involves disowning the old public key at some instance of time. This act of change could lead to invalid transactions being attempted, which would normally have to be repeated with the correct key. However, it gives the opportunity for

ducking the acceptance of unwelcome transactions through assertions about the exact time when the key was "disowned."

The proper registering of public and valid keys therefore becomes a social organisation issue. Typically, it is such social issues which determine the shape of computer networking inter-connections in future business practices.

Following the simple notion that many organisational computer networks can be linked together, the so-called electronic funds transfer operation, for example, is now held to be in some doubt. The genuineness of transferring existing bits of paper is an understanding which has been reached over several centuries of business practice. The same understanding does not readily exist when electronic signals are used to complete business transactions.

Some of the problems are technical, but most of the crucial issues will derive from behaviour patterns which can hardly emerge unless systems are built — an option which seems much like a gamble—or after much study and the use of imaginative simulations and tests which indicate clearly what patterns of behaviour are likely in full scale usage.

The early use of signature strips on credit cards, for instance, exploited plain paper which was easily replaced by a fake version in the hands of professional fraudsters.

The security of computer stored data has been highlighted by the privacy debate. The connection between the two issues demands new standards of business behaviour, both within the computing organisation and also, between the world of business and the public—as a consumer of services and a supplier of data.

It is reluctantly accepted by enthusiasts for interconnected computer networks that a flow of false or corrupt data could seriously undermine the usefulness of such networks. It is readily recognised that if this "beaten" data referred to an individual then it could damage them in a serious way.

There is no clear view of what the position is when a business organisation (or some other legal entity) is the subject of data flows based on bad data. However, every user of computer stored data is likely to be painfully aware of the need for this data to be both accurate, and also hitched

to a control over the period of its validity.

Where the possession of data, of any kind, gives a competitive advantage to an organisation, the need to keep close scrutiny on such material has also long been apparent. For example, some of the seismic data held by oil exploration teams is thought to be of immense commercial value.

Thus, the sum of the embattled computer users' interests relating to stored data can be grouped as follows: the quality control issues of integrity,

currency and validity the assurance issues of protection, security and authenticity; and the social issues of meaningfulness, intent and usage.

Coupled with this formidable list is the need to gain public confidence through proper privacy measures, the exposure of computer criminals, and the humanity of computer systems which are also of commercial benefit to the business world.

Oddly enough, the apparently inbred use of performance measurement tools by computing managers is of enormous

value in helping to resolve the policy priorities of top business management in dealing with polluted data processing.

Although the foundation of these firms, such as Tadata, arose purely from the need to tune up the cost effectiveness of the "plantroom" housing the computer, the continuing boom in this business reflects many auditing side-effects.

The special difference between a data processing plant manager and most industrial plant managers rests on the

quality control problem. A poor industrial plant produces scrap output which can be seen from instrumented flaws in the process steps. The audit trail is not an adequate or comparable set of instruments when data is processed.

Numerous computer centres have set out to measure the performance of their machines, simply to increase the throughput. However, during this measurement phase they have frequently been forced to investigate "oddities" in the

throughput which have led to thorough audit investigations.

Sometimes the final result is just an improved design for program sequences, but on some occasions it has led to the exposure of dubious practices within the firm as a whole, or the computing centre itself. Excessive interrogation of stored data by remote terminals is readily spotted in this way, for instance, but more subtle weaknesses also come to light.

Hedley Voysey

## The 'plug compatibles' market

IBM "PLUG COMPATIBLES" are computers, made by a variety of (non-IBM) manufacturers, which can operate according to the instructions contained in IBM software. In essence, plug compatibles are copies: they are making a good living for the manufacturers by being good copies, which, they claim, deliver what IBM machines can—as efficiently, as rapidly, as accurately—and often cheaper.

Mr. Gene Amdahl, at one time a director of design at IBM, started it all when he formed the company which bears his name, and which reckons to manufacture one fifth of all mainframe (that is, large) computers now being shipped—a much higher proportion than anyone, apart from IBM. That success has come in just over three years.

Amdahl's idea was possible, as much else is, because of the rapid advances being made in semi-conductor technology. Because both micro-processors and semi-conductor memories were being made which had higher and higher densities at lower and lower costs—that is, they could perform more and more functions more rapidly and cheaply—a new company could challenge IBM by making a computer which operated according to the same software, did the same things, but did it much more cheaply. That is exactly what Mr. Amdahl did.

So Amdahl units—and now others—can be purchased by a user with IBM machines to extend his system. It can be run on IBM software and if IBM fights back with a new machine

which attracts the user back to his original supplier, he can go back with no compatibility problems.

Further, he can buy an Amdahl machine first and be assured that he has compatibility with the biggest system in the world. It seems that the plug compatibles have found the ideal market, one created by someone else which continues to dominate it, and whose growth in no way hurts their own—or has not yet.

### Imitators

Mr. Amdahl himself has spawned a number of imitators—one of the more successful being his own son, Carlton, who is vice-president of the Magnuson Corporation, based on a plug-compatible concept which Mr. Magnuson Jr thought up for a doctoral project at the University of California at Berkeley.

Others include the established semi-conductor manufacturer, National Semiconductor, Cambridge Memories and another brand new company, Two PL. Yet another, Electronic Memories and Magnetics, is thinking of moving in on the market, too.

The first competition in the plug compatible business came for the large mainframe end: Amdahl went up against the larger models of IBM's 370 series. Now, it seems that the newer plug compatible companies want to compete at the smaller end of the market, with the less powerful models in the 370 series, where most of IBM's customers are.

IBM responded initially to

this competition in classic fashion—by cutting its prices. In 1977, it brought out its 303X series, which were largely similar to the 370 range but considerably cheaper. Amdahl seemed undismayed by the move—it announced price cuts in its range very soon afterwards.

Last December, IBM slashed prices again, cutting incremental memory prices by 30 per cent on purchase and 20 per cent on rental. Only ICL, a leasing corporation for plug compatibles, immediately responded with price cuts of its own. Amdahl said it wouldn't cut, while others simply said nothing. It was expected that the imitators prices would tend to drift down in the course of time.

However, catching its competition on the hop was not, in the view of a number of IBM watchers, the only reason for the price slashes. IBM was almost due to announce its long-awaited "E" series to replace the 370—it was unveiled earlier this month—and it was thought that it wanted to lower the prices so that the subsequent improvement in price performance which the "E" series would usher in would not seem too dramatic, and therefore not annoy too much the recent purchasers of 370 machines.

The "E" series, widely billed as the "answer" to the plug compatible manufacturers, was partially unveiled at the beginning of February with the introduction of two machines in a new range called the 4300. The two machines are the 4331 and the 4341. The range starts with the 4331 model II, with a

purchase price of \$65,000 and a monthly rental of \$1,882; the II has a half-megabyte memory. It is reckoned that the price performance of the two new machines are between five and eight times greater than their predecessors.

At the same time, the company presented a package of consumer goodies such as peripherals, price cuts on a number of 370 machines, purchase, lease and rental charge cuts, and extension of a 24-month leasing plan to the machines just introduced. IBM—like its sister giant, AT and T—clearly is set to woo its clients rather more ardently than it has in the past.

However, even more significant for the plug compatible market was thought to be a technical trend begun by the new machines. In their case, for the first time, some operating instructions are wired in to the hardware; that is, they are no longer on written-down software which can be bought and copied. IBM is reportedly letting it be known that they will apply this technique to its mainframe machines—which effectively means that the "E" series, and further developments from it, will not be able to be imitated—at least, not by present means. If the company's prospective customers believe this, it may deal the plug compatibles a blow.

These competitors claim (a) that IBM cannot bring in this or any other innovation too fast, because that would annoy the existing users; (b) any price cuts it makes will be more than matched by the plug com-

patibles and crucially (c) wiring in the software into big mainframes is too complex to be done properly, and that the threat of doing so is just bluff. That has yet to be tested.

Yet the competitors don't seem too worried, and part of the reason is that it has become clear over the past year that the demand for extra computing power is almost insatiable, much larger than IBM itself had estimated. Other competing, non-compatible companies, such as ICL of Britain, is estimating a doubling of its sales in the next four to five years (in ICL's case, from about \$500m to £1bn).

### Argument

It is in this demand on which the competitors can thrive, almost irrespective of what IBM does in the short term. Besides, they have another card up their sleeves: anti-trust suits, to which a giant like IBM is especially vulnerable. It seems that IBM and its swarm of imitators will have to get used to living with each other for a while yet.

Indeed, there is an argument recently developed; that it is good for IBM to have these plug compatible manufacturers about, especially at a time of a hungry world market. The argument goes that the plug compatibles, where they get new sales, are actually creating future markets for IBM, assuming the company creates the equipment the market place wants.

John Lloyd

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The devolution debate in Wales . . .



An uphill task for the Yes men

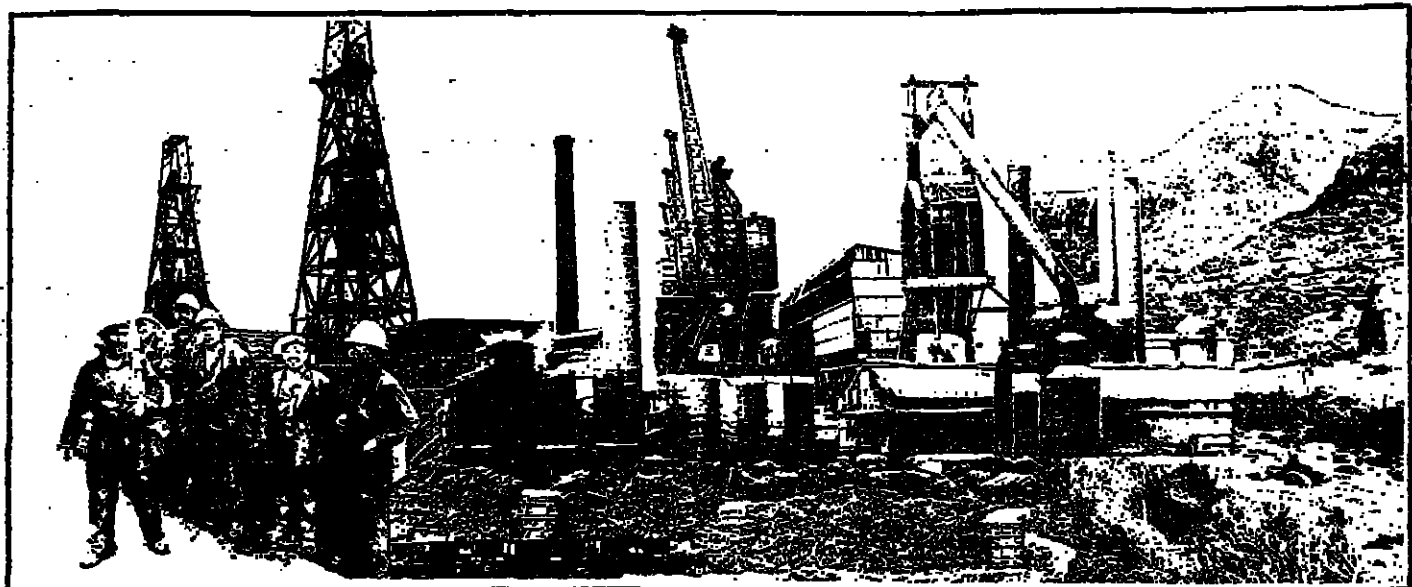
WALES IN theory ought to give a resounding "yes" to the proposed Welsh Assembly in the referendum on March 1. In practice things could be different even though the Government in London, the Labour Party, the Welsh Trade Union Congress, the Liberal Party and Plaid Cymru are all campaigning hard in favour of the devolution proposals.

the way the government of Wales has developed since the post of Minister of State for Welsh Affairs was first created by the Conservatives in 1951. One of the first acts of Mr. Harold Wilson's Labour Government in 1964 was the creation of the Welsh Office in Cardiff and a Secretary of State for Wales with cabinet rank.

re-examine the local government structure, though any legislative changes would be carried out by Westminster itself. That points towards another aspect of the Welsh devolution proposals which might possibly have won them additional support. The Assembly is to have executive powers only. All legislative power over Welsh affairs will remain in the hands of Westminster, substantially weakening the argument that the Act is on the slippery slope to separatism.

of the total vote in Wales at general elections. This pre-eminence is reflected in the two organisations campaigning in favour of devolution. The umbrella Wales for the Assembly Campaign contains the Liberalist, Plaid Cymru, the Communists, the odd Conservative and an array of non-political figures like Sir Gariant Evans, the baritone, Mr. Barry John, a rugby player, and Max Boyce his entertainer, but it is headed mainly by Labour spokesmen. In addition, there is an official Labour Party-Wales, TUC - Co-operative campaign dedicated to winning the back-

By ROBIN REEVES, Welsh Correspondent



Assembly legislation through Parliament. It has clearly given them a head start in the battle for the heart and mind of the traditional Labour voter in the south. The official Labour Party-trade union campaign may also have miscalculated by making as its main platform, the need to democratise the devolved, bureaucratic tier of government already running Wales. Not only is an extension of local democracy low on the list of Welsh voters' priorities, but the opponents of devolution have in their favour the unhappy experience of the Conservatives' reorganisation of government and the unfulfilled benefits of Common Market membership held out in the EEC referendum.

be matters like housing and health, where Wales has actually been receiving less than the share of public expenditure with its population—5.1 per cent of the UK—entitles it. Indeed, on the basis of need, Wales ought to get more. It has by far the worst housing stock of any region and greater health and infrastructure needs than most. Overall public expenditure in Wales is higher than England or Scotland, but the "yes" campaigners stress, the above average share is in areas like unemployment and social security benefits which will remain the responsibility of Whitehall and Westminster and which will be unaffected by the setting up of the Assembly. In its own areas, the "yes" argument runs, the Assembly will increase Welsh bargaining power in the fight for a just share of resources from London and Brussels. Extra jobs and a higher standard of living would flow both from this and political muscle added to the public enterprise activities of the Welsh Development Agency and the Development Board for Rural Wales.

that England subsidises Wales and that the setting up of the Assembly could eventually call this largesse into question. There are also less prominent, but perhaps decisive, reasons why the Welsh seem to be reluctant to embrace the Executive Assembly. Wales has always been a nation divided by geography and, more recently, by economics and culture. Today, Wales is a society which a Welsh minister once described as "too far from God, and too near to England." The decline of the traditional coal and steel industries and the influx of English and multinational industry, the decline of organised religion, rural depopulation, immigration (one in five persons living in Wales was born elsewhere), the powerful influence of predominantly Anglo-American mass media, and better transport communications—all have served to undermine further a Welsh identity kept intact over the past 400 years by little more than a language, culture and tradition.

debates, tensions and differing interpretations of what constitutes Wales and Welshness and how they should develop. The debate centres on the position of the language, now spoken by only 20 per cent of the population. Barely 15 years ago, the language showed every sign of disappearing quietly. Today, it may still be losing ground in the rural heartland, but it is also enjoying an astonishing revival. Welsh language and bilingual schools are springing up all over Wales in response to grass roots pressure, particularly in the anglicised South but this revival gives rise to conflict and fears among an English-speaking majority which the opponents of devolution have not been above exploiting. Few people in Wales would want it simply to become part of England. But it is because there are so many conflicting ideas, over the nature of the Welsh identity and how it is best to be safeguarded economically and socially that pro-devolutionists argue that Wales needs its own political forum. It would arbitrate and give constitutional expression to the conflict in Welsh society. Whatever happens on March 1, which is the day of the patron saint of Wales, St. David, the issue of devolution in Welsh politics is not going to go away.

Patterns of trade

From the Senior Representative UK-Hong Kong Trade Development Council. Mr. Lloyd-Jones (Chairman) agrees with the World Development Movement that protectionism is not the answer to the textile industry's troubles and then proceeds to put the case for an orderly development of world trade in textiles. I think an orderly development of all world trade essential. Trade and services redistribution is the solution towards easing the problems that have been created by self interest and political action.

Letters to the Editor

Britain and incidentally exports to Hong Kong increased 33 per cent. It is also of interest that British exports to the developing countries in 1978 increased 22.5 per cent from £3.7bn to £4.5bn, and imports were 2.5 per cent ahead at £3.4bn (£3.3bn), giving Britain a visible trade surplus of £1.1bn with the Third World. Frank McKellar, Hong Kong Trade Development Council, 14-16, Cockspur Street, SW1

Microprocessors and employment

From Mr. S. Gibbs. Sir.—Discussion of the possible effects of microprocessors on manufacturing industry has ranged between extremes of view, one assertion being that such technology, inherently labour saving, could mean massive redundancy in both white and blue collar sectors. The contrary view is that unemployment is certain to increase if in the UK micro-electronic technology is not developed as quickly as in competitors' countries.

Dead birds at Sullom Voe

From the Director, The Royal Society for the Protection of Birds. Sir.—There is ample justification for criticism of the handling of the oil spill at Sullom Voe—Europe's largest and most modern oil port (Lacey Able, February 9). Because of the quite exceptional international importance of Shetland's waters as a seabird breeding and wintering area, my society was deeply concerned that the highest standards of oil pollution prevention, treatment and monitoring should be provided there. We received complacent assurances from the industry and "environmental advisers" who appeared unwilling to acknowledge the realities of the problems they would face.

Today's Events

- UK: Four Times employees claim unfair dismissal at Industrial Tribunal, Ebury Bridge Road, London. Mr. Zivan Berisavljevic, Yugoslav Ambassador, opens a trade promotion event at Birmingham Chamber of Commerce. Energy Show opens at National Exhibition Centre, Birmingham (until February 25). Photograph at Work Exhibition opens at Wembley Conference Centre (until February 21). Kendal and Dent, London silver bank, High Court hearing resumes on removal of Official Receiver as company's provisional liquidator.

The national heritage

From Mr. D. Mahon. Sir.—Dr. Dalton, the Labour Chancellor who created the National Land Fund in 1946, then described the almost complete failure to make use of the "in lieu of tax" provision since it had been enacted in 1910 as "playing the fool with a great idea." How much more justified is this structure today, when it is seriously proposed—in the White Paper on "A National Heritage Fund"—to abrogate this constructive concept at the very moment when it is most desperately needed!

Liberals in Europe

From the Liberal Prospective Parliamentary Candidate for Mid-Sussex. Sir, It is disappointing to find Elliott Goodman (February 14) hidebound by the results at Westminster in her assessment of the possible outcome of the elections in the UK to the EEC Parliament. It is equally disappointing that an article featured as "Where Britain's Parties Stand" contains not one reference to the leading European party in this country—the Liberals.

Financing

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Liberals in Europe

Conservatives, despite a desperate search for allies, have been rejected by other parties in Europe as the Right Wing and too authoritarian and will be an isolated minority party ranking in size with Communists and with no say in decision making. The old Tory cry of

Large advertisement for Swiss Bank Corporation featuring the text 'Financing: A word with the key Swiss bank could open the way for you.' and a large graphic of a key. The ad includes details about the bank's history, services, and contact information.



# Berisford starts well and expects good result

THE current year has started well for S. and W. Berisford and the group is financially stronger than ever before, Mr. E. S. Margulies, the chairman says in his annual report.

Further satisfactory results for 1978-79 are hoped for, he adds.

As reported on January 19, pre-tax profits for the year ended September 30, 1978 rose by 33 per cent from £23.77m to £31.36m on a turnover of £1.34bn against £1.26bn. The dividend is stepped up to 4.0625p compared with an equivalent 4.125p per share.

The directors are also proposing a scrip issue, on a one-for-10 basis, to raise the authorised capital from £24.15m to £20.15m.

Market share of the sugar division was maintained during the year, Mr. Margulies states, despite heavy competition. At present, however, the off-take of sugar in the UK, he says, does not seem to be increasing, and he feels the division will do well to produce similar figures in the current year.

Results were disappointing from the food and drink division, he says, though the manufacturing companies showed record turnover and profits. H. E. Daniel, of Tumbidge Wells, was acquired in the year.

Despite difficult market conditions the commodities division continued to make good progress, and an increased volume of exports cancelled the loss incurred in the home trade of the wool division, to give a satisfactory result at the year end.

After a steady first half, the by-products side of the business went through a transitional period in the second six months, when the activities were developed and restructured to establish the group's long-term future.

Profitability was severely restricted, the chairman says, in

the meat sector, but the directors are confident that developments in hand for increasing capacity and improving facilities at selected sites will prove beneficial, "and an important factor in achieving long-term viability."

The current year has started satisfactorily in the secondary metals division and Mr. Margulies says the group is in an excellent position to derive maximum benefits from trading.

As at September 30, 1978 fixed assets stood at £27.5m (£22.3m) and net current assets at £63.38m (£55.24m). Shareholders' funds reached £102.1m against a previous £76.37m.

Meeting: Tower Hotel, E. March 14 at noon.

tion Service appearing in the Financial Times:-

Adobe Oil and Gas Corporation (Section: Overseas—New York).

IAS Cargo Airlines Ord. and Cum.Conv.Red.Pref. (Section: Industrials).

Millets Leisure Shops (Section: Drapery and Stores).

Penwalt Corporation (Section: Overseas—New York).

## Sizewell jumps to £0.12m

PRE-TAX revenue of Sizewell European Investment Trust increased sharply from £46,261 to £117,265 in the six months to January 31, 1979. Net asset value per 10p share is up from 105.2p at 31st July, 1978, to 110.3p on total net assets of £8.52m, against £8.66m.

But the board says the first-half increase in net revenue should not be taken as an indication of a similar proportionate rise in net revenue for the full year, although it is expected to show an increase over 1978. The net revenue at half-time rose from £22,281 to £58,285.

Last year the trust turned in pre-tax revenue of £98,132. Revenue after tax was £156,372.

Gross revenue at the half-time stage was up from £231,549 to £385,206. Expenses and interest took £267,941 (£185,288).

Tax takes £62,000 compared with £24,000.

Investments at market value are shown at £13.02m (£11.75m at July 31, 1978).

## Arcoelectric at record £568,786

PRE-TAX profits of Arcoelectric (Holdings) finished the October 31, 1978 year at a record £568,786 against a previous £223,669, following a rise at half-way from £117,302 to £286,901.

Tax for the year took £281,210, compared with £165,707, and after an extraordinary debit last time of £43,153 the balance came out higher at £287,578 (£114,809).

The net dividend per 5p share for the electric switches and neon sign lamp company is increased to 0.446p (0.40625p) with a final of 0.2626p.

## FT Share Service

The following securities have been added to the Share Informa-

## Cableform falls to £171,000

AS FORECAST taxable profits of Cableform Group in the first six months to September 30, 1978 are below those of the two preceding half years. But the group has seen an upturn since midway.

Pre-tax profits of the control gear manufacturers dropped from £370,000 to £171,000 after exchange losses at half-way. Turnover was ahead from £1.83m to £1.73m. Tax takes £53,000 (£107,000).

When reporting last year's annual profits of a record £732,000, against £344,000, the chairman said he expected the

half-time surplus to be lower but he forecast that full year profits would be about the same as those for the previous 12 months.

In their interim statement the directors reiterate the chairman's view on prospects. They add that turnover and pre-tax profits expanded rapidly in the third-quarter and orders scheduled for delivery in the last quarter will achieve a further significant increase.

And production schedules advised by customers for the current calendar year indicate that the group will be able to continue turnover expansion

throughout 1979.

They add that a large part of the net profit reduction at half-way lay in increased indirect charges—mainly additional technical and marketing personnel—taken on in anticipation of a steadily rising demand for the company's products.

The interim dividend per 5p share is lifted from 0.22p net to 1.85p. The chairman at the year end said the Board intended to pay a maximum permitted dividend for the current year split equally over the six months. Last year's total payment was 3.3p.

# Dutch price equals only 57% of EPC asset value

IN A STRONGLY worded statement to shareholders over the weekend English Property Corporation repeated its opposition to the bid by Dutch group Wereldhave on the basis that the price of 46p represents only 57 per cent of the company's net asset value.

In addition to the stated pre-conversion net asset value of 71p EPC says that it has low interest finance worth an extra 8p per share plus a further 2p per share as a result of a recent transaction.

The company also maintains that "the open market value of development properties exceeds book value by 7p per share."

The directors further point out that the interests of Eagle Star, the main shareholder in EPC, and the rest of the shareholders may not coincide. "A fair price for Eagle Star does not reflect a fair price for you," the document states.

The latest statement also contains a detailed rebuttal of Wereldhave's criticisms of EPC's accounting procedures.

On its own policy of capitalising interest on development properties, EPC stresses that

## BOARD MEETINGS

The following companies have notified dates of Board meetings to the Stock Exchange. Such meetings are usually held for the purpose of considering dividends. Official indications are not given as to whether dividends are intended or final, and the sub-divisions shown below are based mainly on last year's meetings.

**TODAY**

Interim: Apex Properties, Consolidated Plantations, Footwear Industry Investments, Impels Petroleum, Jenique Kurssal, Sime Darby.

Final: Drake and Scull, English and Scottish Investors, Marchwell, Scottish Eastern Investment Trust, Temple Bar Investment Trust.

**FUTURE DATES**

Interim: National Carbonising ..... Feb. 22  
Tor Investment Trust ..... Feb. 22

Final: Anglo-International Inv. Trst. .... Feb. 22  
Johnson Group Cleaners ..... Mar. 13  
Yeoman Investment Trust ..... Feb. 21

Canadian company where EPC owns the greater part of the equity while Canadian interests control the majority of the voting rights, EPC defends the £22m book value placed on its subsidiary.

EPC also refutes the suggestion that the company holds a high proportion of smaller properties and points out "that 84 per cent of UK and European investment properties have an individual value in excess of £1m; including North American this increases to 83 per cent."

## BAMBERS BUYS UP ENAHURST

Following the acquisition of 50 per cent of Enahurst last December, Bambers Stores has acquired the remainder for £425,000.

Enahurst is a private property company which owns the freehold of Centric House, Shore-ditch. The majority of Centric House is to be used by the Bambers group.

The consideration is in cash but the vendor has the option to apply part of the money in subscription for 100,000 Bambers shares.

## Sime has 7.58% of Guthrie: extends offer to March 2

Sime Darby, the Far East based international conglomerate which has made a £122m bid for the Guthrie Corporation, revealed over the weekend that it has received acceptances in respect of a mere 6.25 per cent of Guthrie ordinary shares. With the 382,500 shares already owned or purchased by Sime Darby during the offer period, the total rises to 7.58 per cent.

At the same time, however, the company has announced that it is extending its offer of 425p per share until March 2.

In view of this Sime's chairman Tun Tan Siew Sin will ask shareholders to adjourn today's specially convened EGM until March 5.

A statement from Sime also points out that the 1.5m acceptances include 1.34m shares owned prior to the offer period by Consolidated Plantations, a subsidiary of Sime.

Acceptances have also been received in respect of 0.54m 3.925 per cent cumulative preference shares, or 50.62 per cent of the preference capital of Guthrie.

Sime's latest move was unexpected and comes in the wake

of City speculators that the company would raise its offer. Sime is due to announce its interim results today.

## McCLEERY L'AMIE CANADIAN SALE

Contracts have been exchanged by the McCleery L'Amie Group for the disposal of the Canadian subsidiary, Amjay Ropes and Twines for a nominal consideration of \$1, which approximated to net asset value at September 30, 1978.

Terminal losses at Amjays are estimated to be approximately £130,000.

The Board considers the disposal to be beneficial as Amjay's continuing trading losses constituted an unacceptable drain on group resources.

## ROWNREE MACKINTOSH

Rowntree Mackintosh and John Mackintosh and Sons announce that the scheme for the acquisition by RM of the preference stock of Mackintosh not already owned has been approved by the High Court and has become effective.

## SHARE STAKES

British Printing Corporation—London and Manchester Assurance has increased its holding of 4.2 per cent preference shares to 14,000 (9.33 per cent) and its holding of 4.2 per cent "B" preference to 85,500 (11.25 per cent).

Bridgewater Investment Trust—Sagest, SA, has disposed of 350,000 ordinary shares.

Martinox International—On February 12, non beneficial interests of G. Godwin, director, of R. C. Cartwright, director, and of M. S. Gibb were reduced by 165,000 shares.

Fulcrum Estates—London and Manchester Assurance has re-

## BASE LENDING RATES

A.B.N. Bank	13 1/2%	Hill Samuel	11 3/4%
Allied Irish Banks Ltd.	13 1/2%	C. Hoare & Co.	11 3/4%
Amro Bank	13 1/2%	J. & J. Hodge	11 3/4%
American Express Bk.	13 1/2%	Hongkong & Shanghai	13 1/2%
A.P. Bank Ltd.	13 1/2%	Industrial Bk. of Scot.	13 1/2%
Henry Ansbacher	13 1/2%	Keyser Ullmann	13 1/2%
Associates Cap. Corp.	14%	Knowles & Co. Ltd.	14 1/2%
Banco de Bilbao	13 1/2%	Lloyds Bank	13 1/2%
Bank of Credit & Cmce.	13 1/2%	London Mercantile	13 1/2%
Bank of Cyprus	13 1/2%	Edward Hanson & Co.	14 1/2%
Bank of India	13 1/2%	Midland Bank	13 1/2%
Banque Belge Ltd.	14%	Sammel Montag	13 1/2%
Banque du Rhone et de la Tamise S.A.	14%	Morgan Grenfell	13 1/2%
Barclays Bank	13 1/2%	Northern Westminster	13 1/2%
Bremar Holdings Ltd.	14 1/2%	Norwich General Trust	13 1/2%
Brit. Bank of Mid. East	13 1/2%	P. S. Refson & Co.	13 1/2%
Brown Shipley	14%	Rossmore	13 1/2%
Canada Perm't Trust	13 1/2%	Royal Bk. Canada Trst.	13 1/2%
Cayzer Ltd.	14%	Schlesinger Limited	13 1/2%
Cedar Holdings	13 1/2%	E. S. Schwab	14 1/2%
Charterhouse Japhet	13 1/2%	Security Trust Co. Ltd.	13 1/2%
Chaulartons	13 1/2%	Shenley Trust	15%
C. E. Coates	13 1/2%	Standard Chartered	13 1/2%
Consolidated Credits	13 1/2%	Trade Dev. Bank	13 1/2%
Co-operative Bank	13 1/2%	Trustee Savings Bank	13 1/2%
Corinthian Securities	13 1/2%	Twentieth Century Bk.	14 1/2%
Credit Lyonnais	13 1/2%	United Bank of Kuwait	13 1/2%
Duncan Lawrie	13 1/2%	Whiteaway Laidlaw	14%
The Cyprus Popular Bk.	13 1/2%	Williams & Glyn's	13 1/2%
Eagle Trust	13 1/2%	Yorkshire Bank	13 1/2%
English Transcont.	13 1/2%		
First Nat. Fin. Corp.	14%		
First Nat. Sec. Ltd.	14%		
First Nat. Sec. Ltd.	14%		
Greyhound Guaranty	13 1/2%		
Gridlands Bank	12 1/2%		
Guinness Mahon	13 1/2%		
Hambros Bank	13 1/2%		

## BRITISH TAR PRODUCTS

Holdings of British Tar Products £380,000 10p per cent convertible unsecured loan stock 1982 have converted their holdings into 1,285,711 ordinary shares.

As a result, Pension Funds Securities "A" account, one of the pension funds of Imperial Chemical Industries, now holds 1,288,368 ordinary shares (8.85 per cent of the enlarged ordinary capital).

## NO PROBES

The following proposed mergers are not being referred to the Monopolies Commission: Sime Darby Holdings and Guthrie Corporation; Northern Engineering Industries and Ferranti-Packard; Pilkington Brothers and Sola Holdings; Boots and the U.S. agrochemical division of Hercules Incorporated.

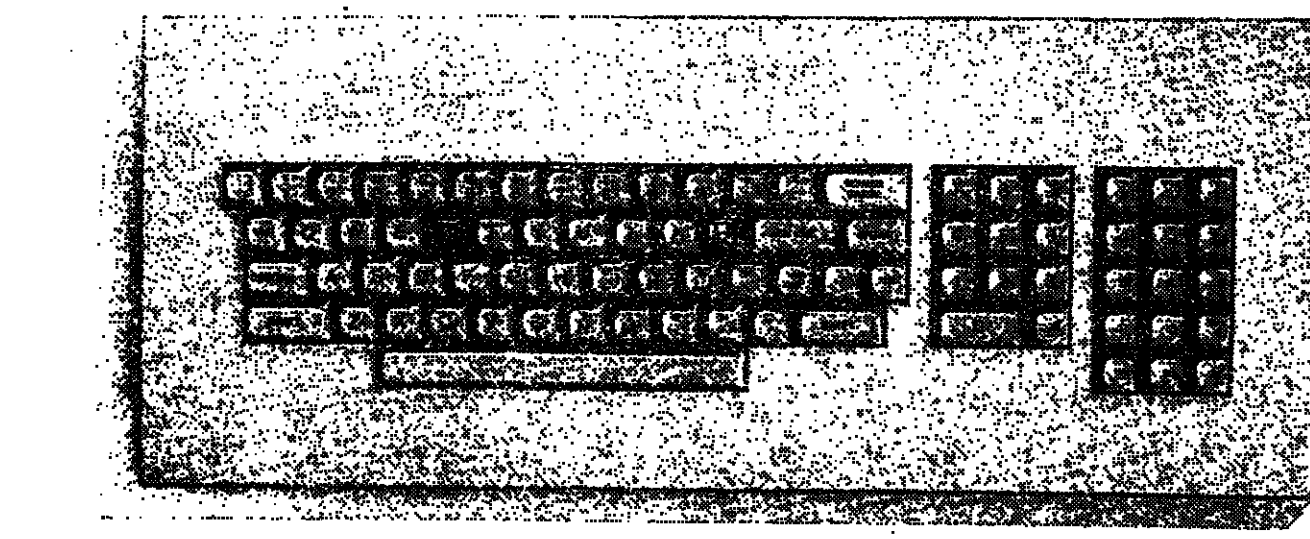
## SIMCO MONEY FUNDS

Sutton Investment Management Co. Ltd.  
60 CANNON STREET EC4N 6AL  
Telephone: 01-236 4225

Rates paid for W/E 18.2.79

Call	7 day	
% p.a.	% p.a.	
Mon.	13.257	12.274
Tues.	13.250	12.384
Wed.	13.274	12.554
Thurs.	13.297	12.560
Fri./Sun.	13.305	13.242

# UNION DISCOUNT



## Moving with the times

Today, 19th February, we return to 39 Cornhill.

Our new offices are purpose-built to provide an even more efficient service.

Each dealer has access to 240 direct telephone links with our customers, to say nothing of a further 30 external lines, Reuter Monitors, on-line computers and 'in-house' video displays. Plus the money-book keyboard you see here, an 'electronic quill pen' unique to us.

For we are in the money business and must move with the times.

The Union Discount Company of London Ltd  
39 Cornhill, London EC3V 3NU.  
Telephone: 01-623 1020 (switchboard). Telex: 886434.

Direct Lines  
Money, Commercial & Treasury Bills 01-623 6672/7 (Reuters Code UDBP)  
Stock 01-626 2201/2  
Commercial Business Development 01-626 5555/6  
Sterling Certificates of Deposit 01-623 1918/20 (Reuters Code UDBP)  
Dollar Certificates of Deposit 01-626 8394/6 (Reuters Code UDDD)  
Computer Department 01-626 6444

**FINANCE FOR INDUSTRY TERM DEPOSITS**

Deposits of £1,000-£50,000 accepted for fixed terms of 3-10 years. Interest paid gross, half-yearly. Rates for deposits received not later than 9.3.78.

Terms (years)	3	4	5	6	7	8	9	10
Interest %	12 1/2	13	13 1/2	13 3/4	14 1/4	14 1/2	14 3/4	15 1/4

Deposits to and further information from The Chief Cashier, Finance for Industry Limited, 91 Waterloo Road, London SE1 8XP (01-928 7822, Ext. 177). Cheques payable to "Bank of England, a/c FFI." FFI is the holding company for ICFC and FCI.

## LOCAL AUTHORITY BOND TABLE

Authority (telephone number in parentheses)	Annual Interest %	gross pay-able	Minimum sum	Life bond
Adur (07917 61591)	13 1/2	1-year	1,000	4-6
Barnsley Metro. (0226 203232)	12 1/2	1-year	250	3-4
Barnsley Metro. (0226 203232)	13	1-year	250	5-7
Exeter (0382 77888)	13	1-year	500	6-7
Poole (02013 5151)	12 1/2	1-year	500	6-10
Redbridge (01-478 3020)	12 1/2	1-year	200	4-5
Sefton (051 922 4040)	13	1-year	2,000	5-7
Wrekin (0952 505051)	13 1/2	yearly	1,000	5-10

**The Tokai Bank Ltd**  
Negotiable Floating Rate U.S. Dollar  
Certificates of Deposit  
Series A Maturity date  
20 August 1980

Agent Bank  
The Chase Manhattan Bank, N.A.,  
London

In accordance with the provisions of the Certificates of Deposit notice is hereby given that for the six month period from 19 February 1979 to 20 August 1979 the Certificates will carry an interest rate of 11 1/4 per annum.

NOTE 1:  
There is no provision for either corporation tax or deferred tax as it is anticipated that stock appreciation relief will be available to cover the amount of the year's profits and will not be clawed back in the foreseeable future.

NOTE 2:  
The Group Profit for the 53 weeks to 28th April 1978 is stated before extraordinary items of £14,550.

TRADING RESULTS:  
My Statement on the 6th October 1978 with the annual accounts to 28th April 1978 remarked that the strengthening of your Company's management team would result in increased profits for the latter part of this financial year. Our order books are full and the annual results should reflect improved profits provided the industrial climate is conducive to stable trading.

As in recent years no interim dividend is recommended.

M. RADU  
Chairman

16th February 1979

For the convenience of readers the dates when some of the more important company dividend statements may be expected in the next few weeks are given in the following table. The dates shown are those of last year's announcements, except where the forthcoming Board meetings (indicated thus) have been officially published. It should be emphasized that the dividends to be declared will not necessarily be at the amounts or rates per cent shown in the column headed "Announcement last year." Preliminary profit figures usually accompany final dividend announcements.

Company	Date	Announcement last year	Company	Date	Announcement last year
AAH	Mar. 9	Int. 2.75	Johnson and Johnson	Feb. 23	Int. 1.3
Aut and Wiborg	Mar. 10	Final 1.3	Kleinwort Benson	Mar. 14	Final 2.4702
BSR	Mar. 7	Final 4.57	Law Service	Mar. 9	Final 2.7 (Int.)
STR	Mar. 8	Final 4.82	London Ship Prop.	Feb. 23	Int. 0.888
Barclays Bk.	Feb. 22	Final 5.5491	London Ship Prop.	Feb. 23	Int. 0.888
Barrat	Mar. 8	Int. 2.64	Marchwiel	Mar. 10	Final 1.28
Devlpmts	Mar. 8	Int. 2.64	Midland Bk.	Mar. 10	Final 1.28
Barrow	Mar. 8	Final 1.9331	Netwest	Mar. 28	Final 0.3228
Bat	Feb. 15	Final 1.738	Novosud	Feb. 23	Int. 0.2125
Bell (Arthur)	Mar. 15	Int. 2.25	Ranocosa Sims	Feb. 27	Final 0.289
Bibby (J.)	Mar. 7	Final 4.0373	and Japeries	Feb. 27	Final 0.289
British Petroleum	Mar. 16	Final 15.121	Royal Inco	Mar. 13	Final 2.472
Brook Bond	Mar. 14	Final 1.09	Shell	Mar. 9	Final 0.882
Brown Bros.	Feb. 16	Int. 0.8318	Smith and Nephew	Mar. 16	Int. 2.0
"Caribbean"	Feb. 21	Sec. int. 0.5	Smeeth	Mar. 16	Final 0.289
Colling (William)	Mar. 16	Final 2.553	Specialised	Jan. 13	Final 2.283
Commercial Union	Feb. 27	Final 5.081	Turner and Newall	Mar. 6	Final 0.289
Drake and Scull	Feb. 19	Final Nil	Unilever	Mar. 7	Final 7.24
Ducelle Steels Mar.	14	Int. 2.281	Tube Investments	Mar. 21	Final 11.128
Edwards	Mar. 1	Int. 3.41	Unicredit	Mar. 14	Final 1.434
Fairclough Construction	Mar. 14	Final 1.388	United Steel	Mar. 15	Int. 1.25
"General"	Mar. 6	Final 7.264	Prop. Int.	Mar. 15	Int. 1.25
Accident	Feb. 28	Final 4.347	Vooper	Mar. 15	Final 2.4 (Int.)
Engineering	Mar. 17	Final 2.2128	Walter J. King	Mar. 15	Int. 1.0
"HK and Shanghai"	Feb. 27	Final HK\$0.47	Goldsmiths	Mar. 15	Int. 1.0
Hoover	Feb. 23	Final 9.21	Watsons	Feb. 28	Final 0.7385
Howden (Alexander)	Mar. 9	Final 4.09	Walsley	Mar. 16	Int. 2.3875
"ICI"	Feb. 22	Secnt. 7.51987			
Jacobs (John J.)	Mar. 15	Final 1.2951			

\* Board meetings indicated. † Right in issue since made from reserves.

**BASE LENDING RATES**

A.B.N. Bank	13 1/2%	Hill Samuel	11 3/4%
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Greyhound Guaranty	13 1/2%		
Gridlands Bank	12 1/2%		
Guinness Mahon	13 1/2%		
Hambros Bank	13 1/2%		

Members of the Accepting Houses Committee:  
7-day deposits 11%. 1-month deposits 11 1/2%.<



INTERNATIONAL COMPANIES and FINANCE

RECENT ISSUES

MEDIUM-TERM CREDITS

Brazil Electrobras achieves better terms for \$400m loan

BY JOHN EVANS

ELECTROBRAS, the Brazilian state electricity concern, is raising a \$400m medium-term loan with conditions which represent a further improvement in the terms of Brazilian state risk in the Euromarkets.

SWISS DOMESTIC BONDS

Losinger blames lower rate for thin response

BY JOHN WICKS IN ZURICH

THE BOND ISSUE of SwFr 20m by Losinger AG, the leading Swiss building concern, of Berne, was not fully subscribed when it was offered on the domestic market from February 8 to 12.

Profits fall at Finance Corporation of Australia A. T. and T. seeks to hold off \$30m payment to Iran

By Our Sydney Correspondent

THE Bank of Adelaide's fully-owned finance company, Finance Corporation of Australia, has reported a fall in earnings of 66 per cent, from A\$2.1m to A\$715,000 (U.S.\$812,000) in the half-year to December 31.

NEW YORK—The American Telephone and Telegraph Company said that the motion it had filed for a restraining order to prevent manufacturers Hanover Trust Company from paying \$30m to the present Iranian government relates to a fund set up by Iran.

AT and T said that it did not know whether the present government, which it claims has no legal rights to those funds, has made any attempt to obtain the payments, but the motion was filed to prevent any possible request from being honoured, if one is made.

Advance at supermarket chain

CINCINNATI—Kroger Company, the U.S. supermarket concern raised its net profit by 61 per cent in the fourth quarter of 1978, to \$30.1m, or \$2.21 a share, from \$18.68m, or \$1.88, in the same period of the previous year.

Stores reported record operating earnings in 1978 but added that gains might be tempered this year as a result of its new store building programme and start-up expenses at its Florida distribution centre.

Earnings rise at Kohler Brothers

BY JIM JONES IN JOHANNESBURG

KOHLER BROTHERS, South Africa's second largest printing and packaging group and a 72.6 per cent-owned subsidiary of Union Corporation, has benefited from the South African economy's emergence from recession.

result of acquisitions. According to the chairman, Mr. Basil Landau, Kohler's profit improvement arises largely from the streamlining of operations carried out over a year ago when it became obvious that South Africa's economy was headed for a slowdown.

EQUITIES

Table with columns: Issue Price, Dividend, Yield, Stock, etc. Includes Caledonian Hedge, etc.

FIXED INTEREST STOCKS

Table with columns: Issue Price, Dividend, Yield, Stock, etc. Includes Baker Perkins, etc.

"RIGHTS" OFFERS

Table with columns: Issue Price, Dividend, Yield, Stock, etc. Includes Baker Perkins, etc.

Renunciation date usually last day for dealing free of stamp duty. Figures based on prospectus summary. Assumed dividend and yield. Forecast dividend based on previous year's earnings.

CLIVE INVESTMENTS LIMITED 1 Royal Exchange Ave., London EC3V 3LU. Tel: 01-283 1101. Index Guide as at February 13, 1979 (Base 100 on 14.1.77)

ALLEN HARVEY & ROSS INVESTMENT MANAGEMENT LTD. 45 Cornhill, London, EC3V 3PB. Tel: 01-623 6314. Index Guide as at February 15, 1979

I.G. Index Limited 01-351 3466. Three month Silver 382.6-385.6 29 Lamont Road, London SW10 0HS.

Public Works Loan Board rates Effective from February 17

Table showing Public Works Loan Board rates for various terms and maturities.

CURRENCIES, MONEY and GOLD

Dollar on thin ice

BY COLIN MILLHAM

President Carter's comments last week about the situation in Iran tended to minimise the problems associated with the withdrawal of Iranian oil, probably with the intention of soothing the foreign exchange market.

THE DOLLAR SPOT AND FORWARD

Table showing Dollar Spot and Forward rates for various currencies and terms.

CURRENCY RATES

Table showing Currency Rates for various countries like Canada, Australia, etc.

GOLD

Table showing Gold prices for various types of gold and coins.

THE POUND SPOT

Table showing Pound Spot rates for various currencies.

OTHER MARKETS

Table showing Other Markets rates for various currencies like Argentina, Australia, etc.

EXCHANGE CROSS RATES

Table showing Exchange Cross Rates for various currencies like Pound Sterling, U.S. Dollar, etc.

MONEY RATES

Table showing Money Rates for various currencies and terms.

LONDON MONEY RATES

Table showing London Money Rates for various currencies and terms.

NEW YORK

Table showing New York money rates for various currencies and terms.

HK lending rates up

BY PHILIP BOWRING IN HONG KONG

HONG KONG'S two largest banks, the Hongkong and Shanghai and Chartered are raising their best lending rate by a further 1 per cent to 10.5 per cent from today.

Banco Nacional do Desenvolvimento Economico

US \$50,000,000 Medium Term Credit



Managed and Provided by LLOYDS BANK INTERNATIONAL LIMITED

CANADIAN IMPERIAL BANK OF COMMERCE COMPAGNIE LUXEMBOURGEOISE DE LA DRESNER BANK AG

THE MITSUI BANK, LIMITED Arranged in co-operation with

BANK OF LONDON & SOUTH AMERICA LIMITED BRAZIL

Agent Bank LLOYDS BANK INTERNATIONAL LIMITED

FRANCE Discount Rate 9.5 Overnight Rate 10.0 One month 10.25 Three months 10.50 Six months 10.75

JAPAN Discount Rate 3.5 Call (Unconditional) 4.375 Bills Discount Rate 4.625

A member of the Lloyds Bank Group



Only rarely is a great new car launched. The Vauxhall Royale is two great new cars. The Royale Saloon and the Royale Coupé.

Both models have beautifully proportioned aerodynamic body designs which transcend the whims of fashion. Both models share a sophisticated suspension system and reassuringly responsive steering.

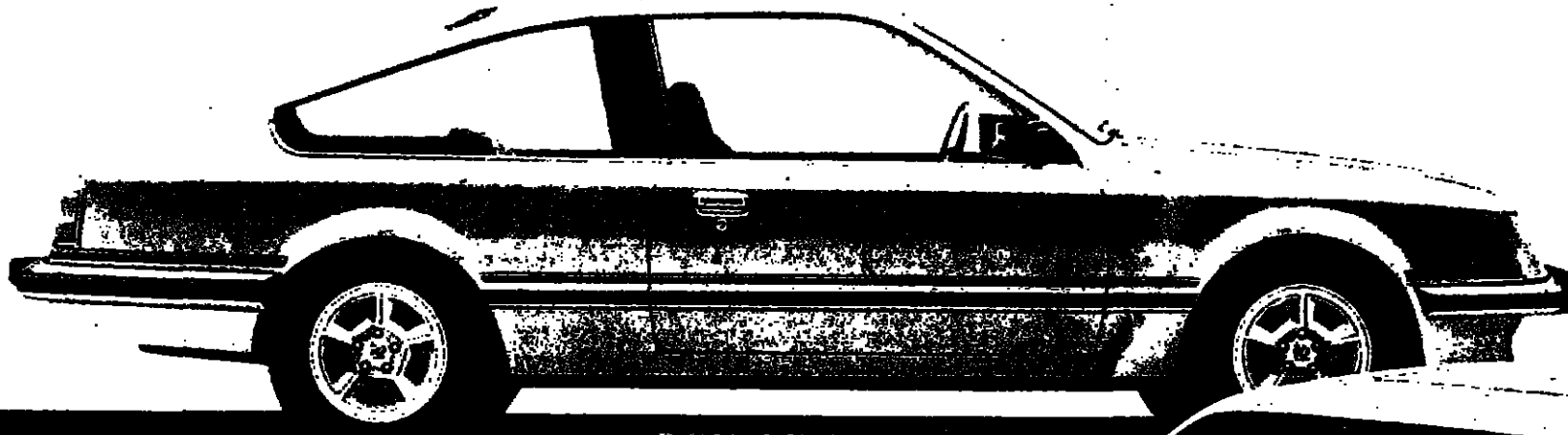
And both models boast a powerful, yet quiet, 2.8 litre 6-cylinder engine of remarkable smoothness.

Inside the Royale the emphasis has been placed on painstaking attention to detail, resulting in a degree of driver and passenger comfort which has to be experienced to be appreciated.

Overall specification, naturally, is of a standard befitting a car of the Royale's exceptional quality. So much so, in fact, there's only one optional extra available. A highly refined air conditioning system.

Each year, many cars are launched, few are chosen. Choose one of the few.

## THE NEW ROYALE FROM VAUXHALL



ROYALE COUPE



ROYALE SALOON



# VERY, VERY OCCASIONALLY A GREAT NEW CAR IS LAUNCHED.

ROYALE SALOON £8,354. COUPE £8,662. PRICES, CORRECT AT THE TIME OF GOING TO PRESS, INCLUDE CAR TAX, VAT AND FRONT SEAT BELTS. DELIVERY AND NUMBER PLATES EXTRA. MANUAL TRANSMISSION AVAILABLE AT NO ADDITIONAL COST. AIR CONDITIONING AVAILABLE AS AN OPTIONAL EXTRA. FOR DETAILS OF YOUR NEAREST DEALER, RING LUTON (0582) 21122, EXT. 4159. FLEET AND MASTER-HIRE LEASING ENQUIRIES, EXT. 4160. PERSONAL EXPORT ENQUIRIES, EXT. 3830.

هناك من النحل



INSURANCE

English law out of tune with EEC

FOR NEARLY 900 years English lawyers and legislators have been able to develop our laws as they have thought fit, without being obliged to take notice of developments on the Continent or in the English-speaking world...

APPOINTMENTS

Senior position at Black and Decker

Mr. Francis P. Lucier, president and chief executive of Black and Decker Manufacturing Company of the U.S., has become chairman in place of Mr. Almonzo G. Decker, Jr. who is retiring from that position...

WORLD STOCK MARKETS

NEW YORK - DOW JONES

Table with columns for Date, High, Low, and various stock indices like Industrial, Transport, Utilities, etc.

EUROPE

Table showing stock market data for Amsterdam, Brussels/Luxembourg, Copenhagen, Vienna, and Germany.

Rises and Falls

Table listing various international stock markets and their performance, including Australia, Belgium, Denmark, France, Germany, Holland, Hong Kong, Italy, Japan, Singapore, Spain, Sweden, Switzerland, and Tokyo.

WALL STREET

Table of New York stock market data, including 1978-79 High/Low, Feb 16 Stock prices, and 1978-79 High/Low for various sectors.

Table of stock market data for various companies, including Johnson & Johnson, Amgen, and others.

Table of stock market data for Canada, including various Canadian companies and indices.

Table of stock market data for other international markets, including Australia, Brazil, Johannesburg, and Milan.

NOTES: Overseas prices exclude S premium. Bel-gan dividends are after withholding tax, unless otherwise stated. All prices are in U.S. dollars, unless otherwise stated.



INTERNATIONAL CAPITAL MARKETS

Companies and Markets

INTERNATIONAL BONDS

Speed draws the U.S. borrower

AMERICAN corporations are back in the Eurodollar bond market on a full force...

may find the offshore bond network gives a useful pricing advantage.

than usual, as FRNs are usually linked to longer-term dollar deposit rates.

treasurers might have one eye on the possibility of official curbs on the international credit market.

was trading at 97 3/8% to yield over 10 per cent.

U.S. corporations have tended to disregard the Eurobond market for their dollar needs in recent years...

Portland General Electric has also just scheduled a \$500 million bond issue...

While U.S. rates are expected to peak later this year, American inflationary pressures may mean a protracted period of high interest rates.

The secondary Eurodollar bond market continued to retreat slowly last week...

Reflecting deteriorating conditions, Westdeutsche Landesbank raised the coupon on the DM 100 million eight-year CNT offering...

JAPANESE LENDING

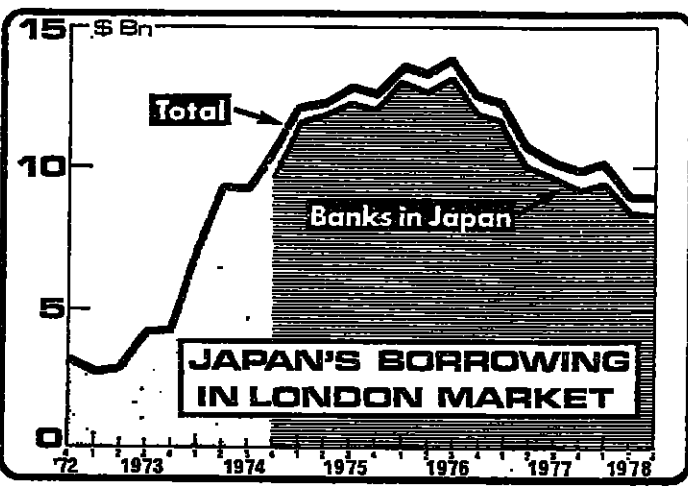
Problems of funding start to ease

BANKERS who regarded the Japanese challenge as a major factor in last year's precipitous fall in lending margins...

the international money markets late last year. This was in one sense surprising because Japanese banks borrowing from other banks round the world...

Under the regulations, as they operated last year, Japanese banks were required to match new medium-term lending with deposits which were not due to mature for at least a year and a day.

dates resulted in a scrimmage for long-term funds last November to December.



term loans, rather than 100 per cent of new lending. Even big Japanese banks, which might be assumed to have significant lending left over from activity in 1977-78 say that this change has eased their positions.

FT INTERNATIONAL BOND SERVICE

Table with columns: U.S. DOLLAR, Issued, Bid, Offer, Change on week, Yield. Lists various bond issues like Agri 4 1/2, Australia 6 1/2, etc.

Table with columns: YEN STRAIGHTS, Issued, Bid, Offer, Change on week, Yield. Lists various yen bond issues like Asian Dev. 5 1/2, Australia 6 1/2, etc.

Table with columns: BONDTRADE INDEX AND YIELD, Medium term, Long term. Shows index values and yields for different bond categories.

Table with columns: DEUTSCHE MARK, Issued, Bid, Offer, Change on week, Yield. Lists various DM bond issues like American Exp. Int. 5 1/2, etc.

Table with columns: FLOATING RATE, Spread, Bid, Offer, C.dte, C.cpn, C.yld. Lists various floating rate bond issues like Arab Int. Bk. M.E.S. 8 1/2, etc.

Table with columns: CONVERTIBLE, Cw. Cwv. Cw. Cwv. Bid, Offer, C.dte, C.cpn, C.yld. Lists various convertible bond issues like Asics 5 1/2, Baker Int. Fin. 5 1/2, etc.

Table with columns: SWISS FRANC, Issued, Bid, Offer, Change on week, Yield. Lists various SF bond issues like Access 5 1/2, Amer. Exp. Int. 5 1/2, etc.

Table with columns: OTHER STRAIGHTS, Issued, Bid, Offer, Change on week, Yield. Lists various other straight bond issues like Rank O/S Hold, Auto Cote 7 1/2, etc.

Table with columns: BUREAU OF TURNOVER, U.S. Bonds, Cw. Cwv. Cw. Cwv. Bid, Offer, C.dte, C.cpn, C.yld. Lists various turnover and U.S. bond data.

BY JOHN EVANS

CURRENT INTERNATIONAL BOND ISSUES

Table with columns: Borrowers, Amount m., Maturity, Av. life years, Coupon %, Price, Lead manager, Offer yield %. Lists various international bond issues like U.S. DOLLARS, SWISS FRANC, LUXEMBOURG FRANC, etc.

U.S. BONDS

BY STEWART FLEMING

Waiting on the sidelines for less uncertain trends

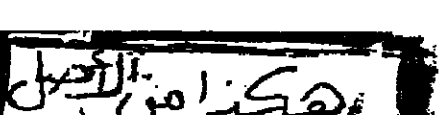
THE CREDIT markets have traded uneasily at the lower levels established earlier in the month with prices broadly unchanged last week in very light trading.

In the money markets, short-term interest rates were virtually unchanged in most sectors and although the weekly average Federal funds rate moved up a notch this is generally seen as a reflection of seasonal factors in the Fed's operations.

The 15.6 per cent annual rate of increase in wholesale prices in January has sparked off projections from Mr. Alan Lerner, of Bankers' Trust, and others. The consumer price index could rise by about 1.3 per cent in the first quarter of the year and 1.2 per cent in the first six months.

NOTICE

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AUTHORISED UNIT TRUSTS

Table listing various unit trusts such as Abbey Unit Tr. Mgrs., Allied Hambro Group, and others, with columns for fund names, managers, and performance metrics.

Table listing insurance and property bonds, including Manulife Management Ltd., Pearl Trust Managers Ltd., and others, with columns for company names and financial details.

Table listing offshore and overseas funds, including Alexander Fund, Keyser Ullmann Ltd., and others, with columns for fund names and performance data.

Table listing insurance and property bonds, including The London & Manchester Ass. Co., and others, with columns for company names and financial details.

CORAL INDEX: Close 454.459. Table with columns for 'Insurance Base Rates' and 'Property Guarantees'.

Table listing insurance and property bonds, including Credit & Commerce Insurance, and others, with columns for company names and financial details.

Table listing insurance and property bonds, including Windsor Life Assur. Co., and others, with columns for company names and financial details.

Table listing insurance and property bonds, including The English Association, and others, with columns for company names and financial details.

NOTES: Section containing various notes and disclaimers regarding the data presented in the tables.







BUSINESSMAN'S DIARY

Table with columns: Date, Title, Venue. Lists various trade fairs and exhibitions such as 'Intnl. Swimming Pool and Allied Trades Exbn.', 'International Men's and Boys' Wear Exhibition', etc.

OVERSEAS TRADE FAIRS AND EXHIBITIONS

Table with columns: Date, Title, Venue. Lists international trade fairs like 'SEHMOM—Men's Fashion Show', 'International Profile Systems Exhibition', etc.

BUSINESS AND MANAGEMENT CONFERENCES

Table with columns: Date, Title, Venue. Lists various business and management conferences such as 'Cranfield School: Young Managers Course', 'CEL: International Financial Management Seminar', etc.

NEWS ANALYSIS: WHY CANADA'S ROYAL BANK BIDS HIGH

The lure of Britain's credit boom

BY WILLIAM HALL

THE Royal Bank of Canada's planned acquisition of Western Trust and Savings has surprised many bankers. Why should Canada's largest bank, which has been operating here since before World War I, suddenly decide to buy a small West Country consumer finance company?

On an unsecured basis, its clientele tends to be down-market from the average clearing bank customer, but judging by the growth in its asset base there is plenty of demand for its services. With the backing of Royal Bank of Canada, Western Trust plans to open 85 new branches over the next 5 years.

Table titled 'FOREIGN OWNED UK FINANCE COMPANIES'. Columns: Company Name, Offices, Assets (£m), Pre-tax profits (£m).

time, and it is easy to see why it was prepared to pay a relatively high price for a well-run existing operation such as Western Trust. There are not many similar operations in existence and what few are left are being snapped up by foreigners.

market than Citibank Trust and is a relative newcomer to the UK market, having opened its first branch only in October 1974. However it now has 67 branches dotted around the country and plans to have close to 200 by the end of 1983. On present projections it sees its new business growing by a compound rate of 50 per cent per annum over the next four years. Although its average loan size is only £500 and its total footings £36m, it is not intent on remaining a small fish for long.

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New Issue February 1979. All the securities having been sold, this advertisement appears as a matter of record only.

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unconditionally and irrevocably guaranteed by Bayer Aktiengesellschaft, Leverkusen/Federal Republic of Germany

Offering Price: 100% Interest: 7 1/4% p.a., payable annually on February 1 on February 1, 1989 at par. Repayment: from March 1, 1979 13 ordinary shares of Bayer Aktiengesellschaft can be subscribed for per bond in the denomination of US-\$1,000... at a subscription price of DM 136.- per share. Listing: Luxembourg

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# FT SHARE INFORMATION SERVICE

FOOD, GROCERIES—Cont.

## BRITISH FUNDS

"Shorts" (Lives up to Five Years)

Int. Rate	Stock	Price	Last	Yield	Net
17M	17M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48
17M	17M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48
17M	17M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48
17M	17M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48
17M	17M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48

Five to Fifteen Years

Int. Rate	Stock	Price	Last	Yield	Net
22M	22M Treasury 4 1/2% 1985	95 1/2	80	13.31	14.88
22M	22M Treasury 4 1/2% 1985	95 1/2	80	13.31	14.88
22M	22M Treasury 4 1/2% 1985	95 1/2	80	13.31	14.88
22M	22M Treasury 4 1/2% 1985	95 1/2	80	13.31	14.88
22M	22M Treasury 4 1/2% 1985	95 1/2	80	13.31	14.88

Over Fifteen Years

Int. Rate	Stock	Price	Last	Yield	Net
14M	14M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48
14M	14M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48
14M	14M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48
14M	14M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48
14M	14M Treasury 3 1/2% 1984	96 1/2	82	13.13	10.48

## BONDS & RAILS—Cont.

Int. Rate	Stock	Price	Last	Yield	Net
10	10 German 4 1/2% 1984	415	412	10.26	16.77
10	10 German 4 1/2% 1984	415	412	10.26	16.77
10	10 German 4 1/2% 1984	415	412	10.26	16.77
10	10 German 4 1/2% 1984	415	412	10.26	16.77
10	10 German 4 1/2% 1984	415	412	10.26	16.77

## AMERICANS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 American 4 1/2% 1984	100	98	10.00	10.00
10	10 American 4 1/2% 1984	100	98	10.00	10.00
10	10 American 4 1/2% 1984	100	98	10.00	10.00
10	10 American 4 1/2% 1984	100	98	10.00	10.00
10	10 American 4 1/2% 1984	100	98	10.00	10.00

## BANKS & HP—Continued

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Bank of America	40	38	10.00	10.00
10	10 Bank of America	40	38	10.00	10.00
10	10 Bank of America	40	38	10.00	10.00
10	10 Bank of America	40	38	10.00	10.00
10	10 Bank of America	40	38	10.00	10.00

## HIRE PURCHASE, ETC.

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Hire Purchase	100	98	10.00	10.00
10	10 Hire Purchase	100	98	10.00	10.00
10	10 Hire Purchase	100	98	10.00	10.00
10	10 Hire Purchase	100	98	10.00	10.00
10	10 Hire Purchase	100	98	10.00	10.00

## BEERS, WINES AND SPIRITS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Beers	100	98	10.00	10.00
10	10 Beers	100	98	10.00	10.00
10	10 Beers	100	98	10.00	10.00
10	10 Beers	100	98	10.00	10.00
10	10 Beers	100	98	10.00	10.00

## BUILDING INDUSTRY, TIMBER AND ROADS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Building	100	98	10.00	10.00
10	10 Building	100	98	10.00	10.00
10	10 Building	100	98	10.00	10.00
10	10 Building	100	98	10.00	10.00
10	10 Building	100	98	10.00	10.00

## CANADIANS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Canadian 4 1/2% 1984	100	98	10.00	10.00
10	10 Canadian 4 1/2% 1984	100	98	10.00	10.00
10	10 Canadian 4 1/2% 1984	100	98	10.00	10.00
10	10 Canadian 4 1/2% 1984	100	98	10.00	10.00
10	10 Canadian 4 1/2% 1984	100	98	10.00	10.00

## BANKS AND HIRE PURCHASE

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Banks	100	98	10.00	10.00
10	10 Banks	100	98	10.00	10.00
10	10 Banks	100	98	10.00	10.00
10	10 Banks	100	98	10.00	10.00
10	10 Banks	100	98	10.00	10.00

## CHEMICALS, PLASTICS—Cont.

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Chemicals	100	98	10.00	10.00
10	10 Chemicals	100	98	10.00	10.00
10	10 Chemicals	100	98	10.00	10.00
10	10 Chemicals	100	98	10.00	10.00
10	10 Chemicals	100	98	10.00	10.00

## DRAPERY AND STORES

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Drapery	100	98	10.00	10.00
10	10 Drapery	100	98	10.00	10.00
10	10 Drapery	100	98	10.00	10.00
10	10 Drapery	100	98	10.00	10.00
10	10 Drapery	100	98	10.00	10.00

## ENGINEERING—Continued

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Engineering	100	98	10.00	10.00
10	10 Engineering	100	98	10.00	10.00
10	10 Engineering	100	98	10.00	10.00
10	10 Engineering	100	98	10.00	10.00
10	10 Engineering	100	98	10.00	10.00

## FOOD, GROCERIES, ETC.

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Food	100	98	10.00	10.00
10	10 Food	100	98	10.00	10.00
10	10 Food	100	98	10.00	10.00
10	10 Food	100	98	10.00	10.00
10	10 Food	100	98	10.00	10.00

FOOD, GROCERIES—Cont.

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Food	100	98	10.00	10.00
10	10 Food	100	98	10.00	10.00
10	10 Food	100	98	10.00	10.00
10	10 Food	100	98	10.00	10.00
10	10 Food	100	98	10.00	10.00

HOTELS AND CATERERS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Hotels	100	98	10.00	10.00
10	10 Hotels	100	98	10.00	10.00
10	10 Hotels	100	98	10.00	10.00
10	10 Hotels	100	98	10.00	10.00
10	10 Hotels	100	98	10.00	10.00

INDUSTRIALS (Miscel.)

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Industrials	100	98	10.00	10.00
10	10 Industrials	100	98	10.00	10.00
10	10 Industrials	100	98	10.00	10.00
10	10 Industrials	100	98	10.00	10.00
10	10 Industrials	100	98	10.00	10.00

## INTERNATIONAL BANK

Int. Rate	Stock	Price	Last	Yield	Net
10	10 International	100	98	10.00	10.00
10	10 International	100	98	10.00	10.00
10	10 International	100	98	10.00	10.00
10	10 International	100	98	10.00	10.00
10	10 International	100	98	10.00	10.00

## CORPORATION LOANS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Corp Loans	100	98	10.00	10.00
10	10 Corp Loans	100	98	10.00	10.00
10	10 Corp Loans	100	98	10.00	10.00
10	10 Corp Loans	100	98	10.00	10.00
10	10 Corp Loans	100	98	10.00	10.00

## COMMONWEALTH & AFRICAN LOANS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Commonwealth	100	98	10.00	10.00
10	10 Commonwealth	100	98	10.00	10.00
10	10 Commonwealth	100	98	10.00	10.00
10	10 Commonwealth	100	98	10.00	10.00
10	10 Commonwealth	100	98	10.00	10.00

## LOANS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Loans	100	98	10.00	10.00
10	10 Loans	100	98	10.00	10.00
10	10 Loans	100	98	10.00	10.00
10	10 Loans	100	98	10.00	10.00
10	10 Loans	100	98	10.00	10.00

## FOREIGN BONDS & RAILS

Int. Rate	Stock	Price	Last	Yield	Net
10	10 Foreign	100	98	10.00	10.00
10	10 Foreign	100	98	10.00	10.00
10	10 Foreign	100	98	10.00	10.00
10	10 Foreign	100	98	10.00	10.00
10	10 Foreign	100	98	10.00	10.00

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Int. Rate	Stock	Price	Last	Yield	Net
10	10 Chemicals	100	98	10.00	10.00
10	10 Chemicals	100	98	10.00	10.00
10	10 Chemicals	100	98	10.00	10.00
10	10 Chemicals	100	98	10.00	10.00
10	10 Chemicals	100	98	10.00	10.00

## ENGINEERING MACHINE TOOLS



INDUSTRIALS—Continued

Table of industrial stocks including companies like British Petroleum, Shell, and ICI, with columns for stock price, dividend, and other financial metrics.

INSURANCE—Continued

Table of insurance stocks including companies like Prudential, Sun Life, and Royal Indemnity, with columns for stock price, dividend, and other financial metrics.

PROPERTY—Continued

Table of property stocks including companies like British Land, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

INVESTMENT TRUSTS—Cont.

Table of investment trusts including companies like British Investment Trust, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

FINANCE, LAND—Continued

Table of finance and land stocks including companies like City of London, Anglo-Continental, and British Investment Trust, with columns for stock price, dividend, and other financial metrics.

Advertisement for SANWA BANK, Tokyo, Japan, with the slogan 'Serving the world with financial expertise.'

MINES—Continued

Table of mining stocks including companies like Anglo-American, Anglo-Platinum, and Anglo-Titanium, with columns for stock price, dividend, and other financial metrics.

LEISURE

Table of leisure stocks including companies like British Leisure, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

MOTORS, AIRCRAFT TRADES

Table of motor and aircraft trade stocks including companies like British Aerospace, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

Motors and Cycles

Table of motor and cycle stocks including companies like British Motor, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

Commercial Vehicles

Table of commercial vehicle stocks including companies like British Commercial Vehicle, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

Components

Table of component stocks including companies like British Component, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

Garages and Distributors

Table of garage and distributor stocks including companies like British Garage, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

NEWSPAPERS, PUBLISHERS

Table of newspaper and publisher stocks including companies like British Newspaper, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

PAPER, PRINTING

Table of paper and printing stocks including companies like British Paper, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

ADVERTISING

Table of advertising stocks including companies like British Advertising, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

SHIPPING

Table of shipping stocks including companies like British Shipping, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

SHOES AND LEATHER

Table of shoe and leather stocks including companies like British Shoe, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

SOUTH AFRICANS

Table of South African stocks including companies like Anglo-American, Anglo-Platinum, and Anglo-Titanium, with columns for stock price, dividend, and other financial metrics.

TEXTILES

Table of textile stocks including companies like British Textile, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

TOBACCO

Table of tobacco stocks including companies like British Tobacco, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

TRUSTS, FINANCE, LAND

Table of trusts, finance, and land stocks including companies like British Trust, Anglo-Continental, and City of London, with columns for stock price, dividend, and other financial metrics.

OILS

Table of oil stocks including companies like Anglo-Continental, City of London, and British Oil, with columns for stock price, dividend, and other financial metrics.

OVERSEAS TRADERS

Table of overseas trader stocks including companies like Anglo-Continental, City of London, and British Overseas, with columns for stock price, dividend, and other financial metrics.

RUBBERS AND SISALS

Table of rubber and sisal stocks including companies like Anglo-Continental, City of London, and British Rubber, with columns for stock price, dividend, and other financial metrics.

TEAS

Table of tea stocks including companies like Anglo-Continental, City of London, and British Tea, with columns for stock price, dividend, and other financial metrics.

INDIA AND BANGLADESH

Table of India and Bangladesh stocks including companies like Anglo-Continental, City of London, and British India, with columns for stock price, dividend, and other financial metrics.

Sri Lanka

Table of Sri Lanka stocks including companies like Anglo-Continental, City of London, and British Sri Lanka, with columns for stock price, dividend, and other financial metrics.

Africa

Table of African stocks including companies like Anglo-Continental, City of London, and British Africa, with columns for stock price, dividend, and other financial metrics.

GOLDS EX-GRANDIS

Table of gold stocks including companies like Anglo-Continental, City of London, and British Gold, with columns for stock price, dividend, and other financial metrics.

NOTES

Notes section providing additional information and commentary on the market, including details on dividends and company performance.

MINES

Table of mining stocks including companies like Anglo-American, Anglo-Platinum, and Anglo-Titanium, with columns for stock price, dividend, and other financial metrics.

CENTRAL RAND

Table of central rand stocks including companies like Anglo-Continental, City of London, and British Central, with columns for stock price, dividend, and other financial metrics.

EASTERN RAND

Table of eastern rand stocks including companies like Anglo-Continental, City of London, and British Eastern, with columns for stock price, dividend, and other financial metrics.

FAR WEST RAND

Table of far west rand stocks including companies like Anglo-Continental, City of London, and British Far West, with columns for stock price, dividend, and other financial metrics.

REGIONAL MARKETS

Table of regional market data including stock prices and other financial metrics for various regions.

FINANCE

Table of finance data including interest rates, exchange rates, and other financial metrics.

DIAMOND AND PLATINUM

Table of diamond and platinum stocks including companies like Anglo-Continental, City of London, and British Diamond, with columns for stock price, dividend, and other financial metrics.

CENTRAL AFRICAN

Table of central African stocks including companies like Anglo-Continental, City of London, and British Central, with columns for stock price, dividend, and other financial metrics.

OPTIONS

Table of options data including call and put options for various stocks, with columns for stock price, option price, and other financial metrics.

3-month Call Rates

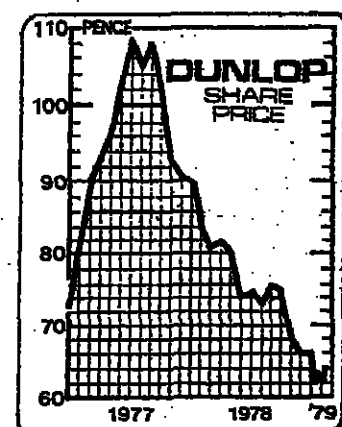
Table of 3-month call rates for various stocks, with columns for stock price, call rate, and other financial metrics.





## THE LEX COLUMN

# Dunlop's strategy for tyres



There is at present a handful of blue chip companies about which the City has major reservations—and one of the most prominent of them is Dunlop. On the basis of 1977's dividend payment, its shares at 64p yield comfortably over 12 per cent, or more than twice the market average. Its tyre business in the UK and the rest of Europe is a gaping wound out of which flowed substantial losses in 1978, and the outcome of last month's decision to close down over a fifth of its tyre making capacity in the UK is still in question. Recent reports that the group has been unsuccessful in an attempt to secure substantial state aid to help reshape its troubled tyre side only add to the uncertainty.

### Shared problems

Dunlop is not alone with these problems. Last month Firestone started discussing major cutbacks in its European workforce. Goodyear's UK subsidiary has indicated losses of as much as £18m in 1978, and a host of other tyre makers around the world face financial difficulties of one kind or another. Moreover, most of the rest of Dunlop's business is sound. It earns high returns (like BTR) on some of its industrial products, the consumer side has been performing well and the sports business, although there are some patchy spots, has probably also been doing rather better lately. Even in tyres, Dunlop can have few complaints about the results outside Europe.

But with over £500m of tyre sales in Europe, its group results for 1978, due to be published in April, can only be grim. The City is expecting that Dunlop will make profits of between £40m and £45m pre-tax (down from £57m in 1977 and £72m in 1978) on sales of very roughly £1.2bn. This is before taking account of substantial write-offs to cover rationalisation expenses, which will be taken below the line.

### Dividend decision

On the other hand, the cost in terms of market status of a dividend cut—coming so soon after the rights issue and accompanying dividend increase in 1977—would be such that any future attempt to raise further equity could be jeopardised. That is something which Dunlop must be very anxious to avoid.

How serious are the financial pressures? Despite the deterioration in 1978, the

balance sheet itself should present no particular worries, with total stockholders' funds (including a very big slice of minority interests) somewhere in the region of the £400m shown at the end of 1977. Although borrowings are up, Dunlop has for some time been making a big effort to improve its debt profile, and the over-draft element may not have risen that much. In addition it has repaid £100m of foreign currency loans—which should have helped to increase the average life of its debt—and most of its remaining overseas borrowings appear to be reasonably well matched with assets.

The financial gearing in the profit and loss account is, of course very much more formidable, with the finance charge probably covered less than three times. What all this implies is that, although Dunlop has obviously not a serious problem, it has not got a serious cash problem. The depreciation provision alone could roughly match pre-tax profits this year. If all goes according to plan—a big proviso—the cash position should not be a major worry in the future either.

### Borrowing need

Borrowings are likely to rise further during the next couple of years as Dunlop makes the big effort to get its European operations in balance. But the pace of the increase should not be as great as last year, and the required facilities for the period are likely already to be in place. Thereafter the overseas side should continue to be more or less self-financing, and provided that the wounds of the European tyre operation can be cauterised, the external financial needs of the group as a whole should not be unduly large.

Everything depends on the success of the cutbacks in tyre production in Europe. The group has already gone a fair way towards reshaping its continental operations. At home, its strategy rests on much higher productivity, and that in turn relies on co-operation with and from the unions. If it succeeds, there must be at least a chance of a return to profits in what is a mature industry, which will have shot down great chunks of high cost capacity. If it fails, the medium term future for Dunlop will be bleak indeed. Decisions taken in the next few months seem likely to be critical.

shift some of its gearing overseas. Apart from anything else, it is obviously inefficient to have high finance costs in the UK where substantial tax allowances are available to set off against future profits. But there are strict limitations on how far this can be achieved, not least because of the existence of minority shareholders in most of the overseas companies.

Despite a low sided balance sheet, however, Dunlop still has to be regarded as a single international entity, with worldwide cover for its debt and dividends. It must obviously be reluctant to sell off any of its cash generating assets overseas, but it presumably could reshape itself in this way if it seemed necessary. Meanwhile it is wrong to think in terms of ring fences: there must, for instance, be a useful flow of royalties and technical fees to help restore the UK balance.

So despite the political pressures on a group which is in the middle of a major redundancy programme, there is a better than even chance that Dunlop will maintain its dividend for 1978. The cost of doing so—around £10m gross—does not loom all that large for a group which has put well over £300m into fixed assets and working capital over the last five years.

Although capital spending was held back last year, this poor performance is bound to have had a marked impact on borrowings. Year-end debt could be nearly a fifth higher than 1977's net £273m, with the UK accounting for a big chunk of the increase. This will further exaggerate the international imbalances within the overall financial structure. Outside Europe, borrowings are relatively low, but debt levels in the UK are high, and rising.

Ideally, Dunlop might like to

# Egypt's strong warning to U.S.

By Roger Matthews in Cairo

EGYPT TOOK a hard line with the U.S. yesterday in talks to pave the way for next Wednesday's big effort by Washington for a breakthrough in the stalled Middle East peace talks at Camp David.

President Anwar Sadat is reported to have told Mr. Harold Brown, the U.S. Defence Secretary that Egypt would make no further concessions to Israel in the negotiations.

Any further concessions must come from Israel, Mr. Sadat told Mr. Brown, who yesterday ended a 10-day Middle East tour to prepare the ground for talks and ally fears in the Gulf after the upheavals in Iran.

The Middle East peace process has been bogged down since the failure by President Carter to achieve a treaty between Israel and Egypt after last year's Camp David summit meeting.

The Egyptian delegation will be led by Mr. Mustapha Khalil, the Prime Minister, whom Mr. Sadat has appointed Foreign Minister, a post unfilled for the past five months.

Mr. Mohammed Faruq Kamel, former Egyptian Minister, resigned last September during the Camp David summit talks because of the terms that Egypt was accepting.

During his talks with Mr. Brown, Mr. Sadat urged that Egypt be given increased U.S. military and political support to bring her more into line with that supplied to Israel.

### Libyan threat

A U.S. military delegation is expected to arrive in Cairo within the next few weeks to assess Egypt's military shopping list, which includes tanks, armoured personnel carriers, naval vessels and anti-aircraft missiles.

According to officials Mr. Sadat expressed particular concern about the possible military threat posed by Libya, and emphasised his determination to support the Sudan against an external threat.

L. Daniel reports from Jerusalem: Mr. Moshe Dayan, Israeli Foreign Minister, who leaves today for the Camp David talks, does not think that the Egyptian agreement permitting signature of the proposed peace treaty.

He expects progress but sees convening of the proposed Summit—Sadat, Carter, Begin—as essential to conclude the negotiations.

Mr. Dayan said the Iranian crisis had spurred the U.S. into seeking an Israeli-Egyptian peace treaty as soon as possible.

"The U.S. does not think time is working in its [an agreement's] favour," he told an Israeli radio interviewer.

# Iranian workers end strikes as Khomeini gains control

BY SIMON HENDERSON IN TEHRAN

THE FIRST encouraging signs emerged over the week-end that Ayatollah Ruhollah Khomeini, Iran's religious and political leader, is gaining control of events with the return to work at his request of the majority of Iran's workers after several months of strikes.

The political strikes, called by the Ayatollah, had been largely instrumental in expelling the Shah and subsequently toppling the government of Dr. Shapour Bakhtiar, his nominee.

The response to the call for a return to work was generally good. The country's oil workers responded in large numbers, although industry and commerce are still affected by the backlog of goods held up at the country's ports and frontiers by a customs officials' strike, due to end on Wednesday.

The 60,000 or so oil workers have been told by Ayatollah Khomeini to produce sufficient

oil for domestic needs only, about 700,000 barrels a day at this time of year. There seems little chance that oil production will return to anything like its previous level of about 6m barrels a day. On Saturday, the production rate was estimated at 645,000 b/d.

There were signs that some left-wing oil workers were not responding to Khomeini's call, and were still on strike, particularly at Abadan, Iran's main refinery.

### Imperial Guard

With industrial production reduced to 25 per cent of normal, the first indications of a badly needed economic revival came amid great political uncertainty. Dr. Mehdi Bazargan, the Khomeini-appointed Prime Minister, has still not nominated an Economics Minister.

After problems with his original nominations, Dr. Bazar-

gan has announced the appointment of Col. Nasser Mojallesi as chief of police, Col. Momtaz as head of the para-military gendarmeries, and Major-General Shapour Azarbar as air force chief of staff. The 12,000-strong Imperial Guard, fiercely loyal to the Shah, has been dissolved by decree.

Bank Markazi Iran, the Iran Central Bank, is being run by an eight-man revolutionary committee, headed by Mr. Ali Rastidi, leader of the strike committee. Businessmen report that the bank appears to want to meet its obligations but progress will be slow.

The two main and potentially opposed guerrilla groups—the Left-wing Fedayeen and the Islamic Mujaheddin—have left their strongholds in Tehran University and their new bases are not known.

The continuing revolutionary spirit was given a further boost

on Saturday with the arrival of Mr. Yassir Arafat, the PLO leader, who immediately went to see Ayatollah Khomeini.

A purge continues of the ranks of the armed forces with four generals shot last week and 34 formally retired in the last two days, many of them now under arrest.

### Evacuation

On Saturday and Sunday, about 460 Eritreans were evacuated by the RAF to the British base at Akrotiri in Cyprus. Under the protection of men armed by Ayatollah Khomeini, the first phase of a mass evacuation of the remaining Americans, estimated at 5,000, began on Saturday.

Israel radio reported that the Iranian government had ordered Israelis to leave Iran and told Iranian officials in Tel Aviv to return home.

# Shopfloor link plan

By Nick Garnett, Labour Staff

THE PROSPECT of special union conferences to involve the shopfloor more closely in discussions on pay and inflation at national level was held out yesterday by Mr. Len Murray, general secretary of the TUC.

Following last week's agreement between the Government and the unions which includes an inflation target of 5 per cent within three years, Mr. Murray said that the possibility of achieving pay settlements which might be consistent with that target depended on the mood of the workforce.

If the climate on the shopfloor was not conducive to this, no amount of pay fixing machinery or advice from the TUC would be sufficient to ensure what might be considered reasonable settlements.

Translating the need to keep pay settlements at a level consistent with economic targets was best done by ensuring that individual groups of workers saw the relevance of this to their own position, said Mr. Murray.

Speaking on Independent Television's Weekend World, Mr. Murray suggested the possibility of national and regional union conferences for the TUC to explain its overall attitude to the country's economic prospects as well as to test the waters as to what would be acceptable to the shop floor.

There was no denying the need for pay mechanisms and Mr. Murray mentioned pay comparability and relativities studies as well as the tripartite national assessment meetings enshrined in the TUC-Government agreement.

# Widest pipeline to bring North Sea gas 200 miles

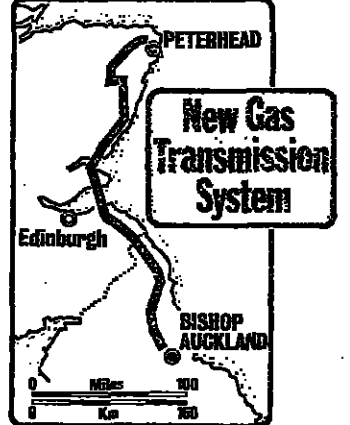
BY ROY HODSON

THE largest-diameter long-distance pipeline to be laid in Britain will carry natural gas from near Peterhead, in north-east Scotland, to Bishop Auckland, 200 miles to the south.

The British Gas Corporation has placed a £45m order with the Tubes Division of British Steel Corporation.

The pipeline, the first part of which will be commissioned in 1981, is designed to bring gas from the North Sea Brent Field into the national gas grid after processing at the St. Fergus terminal, near Peterhead.

The contract has a special significance for British Steel. It is regarded as a vote of confidence in the corporation's newly operational large-diameter pipe-making facilities on Teesside.



The order will rely upon the new low-cost iron and steel-making facilities at British Steel's Teesside works.

The corporation expects to produce high-quality steel at manufacturing costs competitive with the best international levels after the new 10,000-tonne-a-day blast furnace is brought into use later this year.

The pipeline order is a bright spot in a generally dull picture of British steel demand. Department of Industry figures show that in the fourth quarter of last year steel consumption fell sharply reflecting lower levels of activity in most of the main steel-consuming industries.

Total steel consumption last year is put at 15.5m production tonnes, compared with 15.3m the previous year, and levels of about 17.5m annually in the early 1970s.

# Government agrees increases up to 36% for Civil Service

BY PHILIP BASSETT, LABOUR STAFF

THE GOVERNMENT has agreed pay increases averaging 26.36 per cent for white-collar civil servants based on the findings of an independent comparability study.

Union dissatisfaction with the imprecise nature of the offer put by Lord Peart, the Lord Privy Seal, though, is too strong to avert Friday's one-day national strike by 285,000

members of the civil service's two largest unions.

Further meetings between civil service union leaders and Civil Service Department Ministers expected this week could make the terms of the offer clear enough to temper that dissatisfaction.

The rises estimated to be due from the findings of the Pay Research Unit, which has been re-activated for this year's settlement in April for the first time since the present series of pay controls began, have long been thought by Ministers to be an embarrassment to the Government, which is trying with health and local authority manual workers to keep public sector settlements at least in touch with its original 5 per cent limit.

A threatened programme of civil service industrial action, particularly by computer staff represented by the Society of Civil and Public Servants, if the Research Unit's findings were not met, and the seriousness of the traditionally non-militant civil servants' intent appears to have forced the Government to give way.

The change in the official position came at a meeting at the Civil Service Department on Friday between Lord Peart, Mr. Bill Kendall, secretary-general of the staff side of the Whiteley Council, which represents all 600,000 white collar civil servants, and leaders of

the civil service unions.

This meeting followed one between union leaders and Mr. Len Murray, TUC General Secretary, who in the light of the concordat with the Government, urged that Friday's strike by members of the Society and the Civil and Public Services Association should be called off.

Lord Peart also said that the Government was prepared to offer a staged deal for the civil service. Both union and CSD officials have thought privately for some time that staging would be the only way round the impasse of the Research Unit findings and any pay limit in force.

In meetings this week, the unions will try to clarify how much of the increases due from the Unit's reports will be available in April, and how much held over in the staging.

The Unit reports showed that rises of 25.39 per cent are due for clerical assistants and that 25.83 per cent for clerical officers, members of the CPSA, and 26.36 per cent for the middle-ranking executive officers, members of the Society.

The increases, if paid in full, would raise clerical assistants' pay from £44,125.00 to £54,463, clerical officers, from £49,784.84 to £65,479 and executive officers, from £59,648.72 to £86,111. Findings aid industrial workers, Page 6

Continued from Page 1

# Scottish opinion poll

Clitheroe in the by-elections on March 1, the Government with its supporters would need to find seven votes from minority parties in order to survive a Commons eureka motion from the Tories.

Robin Rees writes: A concentrated effort to rally Welsh voters behind the Government's proposals for an Assembly in Cardiff starts this week. High spot of the campaign will be a speech by Mr. Callaghan in Swansea on Wednesday.

The Prime Minister is expected to reassure Labour voters that the Assembly will not weaken Welsh links with Westminster. The proposal is for an executive Assembly only, with legislative power remaining at Westminster.

The Commons, which adjourns next week to enable MPs to campaign in the referendums, will spend today and tomorrow discussing recommended reforms in its own procedures. No firm conclusions are likely to be reached despite demands from Mrs. Thatcher and other Conservative leaders for an early decision on more than 70 recommendations made by the all-party Procedure Committee last session.

Mr. Michael Foot, Leader of the Commons, will argue when he winds up the debate that it is more sensible to let a new Parliament legislate on its own procedures rather than push ahead with a Bill or to commit it in the dying weeks of an old Parliament.

# Britain wary over EEC's shipping initiative

BY IAN HARGREAVES, SHIPPING CORRESPONDENT

THE FOUR-YEAR struggle to find a common EEC position on the developing world's hopes in liner shipping could be resolved tomorrow following an initiative by the European Commission.

A meeting of European transport ministers will study a four-point formula worked out by the Commission following a series of top-level meetings in European capitals in recent weeks.

The formula is designed to enable the EEC states en bloc to ratify the 1974 United Nations Liner Shipping Code, which is based on sharing cargo on fixed shipping routes in the proportions 40:20 between exporting, importing and outsider or cross-trading countries.

British officials, who have led opposition to the code on the grounds that it would interfere with the normal

commercial allocation of market shares and weaken the position of the large, cross-trading British liner fleet, are adopting a cautious attitude towards the new package.

They say that the outcome depends upon attitudes adopted at tomorrow's meeting, but are not ruling out the possibility of a breakthrough.

The latest Commission proposal is designed to satisfy Britain's desire to see the effects of the code minimised in trade between developed countries, while attempting to ensure that Belgium will receive encouragement to push up its share of its own liner trades from 10 per cent closer to the 40 per cent specified in the code.

The four points in the proposal are:

● In trades between developed countries (members of the Organisation for Economic Co-operation and Development) the cargo-sharing arrangements will not apply, but cross-traders from developing countries will be able to cite the code in seeking a 20 per cent share even in these trades.

● In trades between an EEC state and developing countries, the member state's 40 per cent share would be open to competition from other EEC lines on a commercial basis. Other non-EEC OECD lines would be able to join in this redistribution if they could offer reciprocal opportunities in trades where they enjoyed the code's protection.

● Every effort will be made to persuade other OECD countries to follow the EEC line.

that where a country, such as Belgium, does not have a "fair" share of its own liner trade, the line affected should bargain and seek unanimous agreement on shares. The council should also adopt a statement encouraging "fairness" in these negotiations.

The extreme positions of Belgium and the UK are obviously only partially met in the formula and British feeling remains that the code is in the thin edge of the protectionist wedge.

If agreement is reached, it will be on the basis that a common position is desirable in advance of the next meeting of the UN Conference on Trade and Development in Manila in May and because agreement on the code is seen as an essential first plank in developing an EEC maritime policy.

# Weather

UK TODAY  
MAINLY cloudy and cold; London, S.E. E. Anglia, E. Midlands.

Cloudy, early sleet or snow. Cent. S. England, W. Midlands, Channel Isles, N.W. and Lakes. Cloudy, rain, sleet or snow at first. Max. 2C (36F).

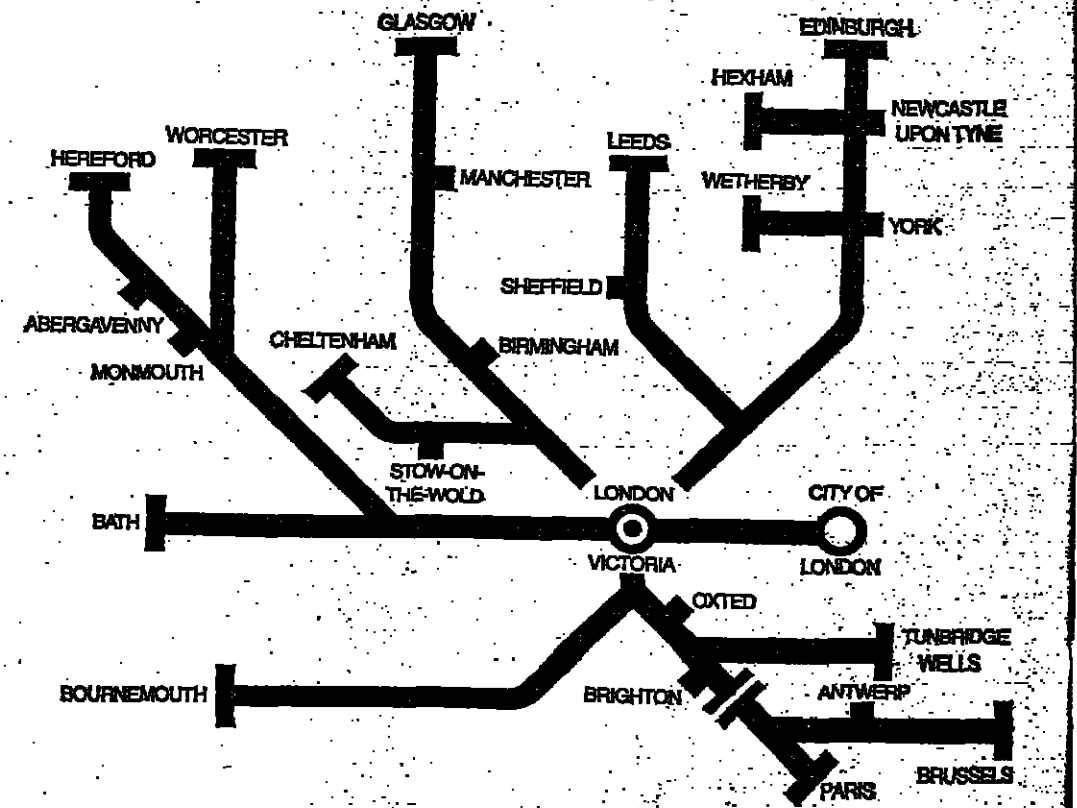
Cloudy, rain, sleet or snow at first. Max. 2C to 3C (36F to 37F).

Orkney, Shetland. Cloudy, some rain, sleet or snow. Max. 2C to 3C (36F to 37F).

● Outlook: Cold, mostly dry in East; less cold in West with occasional rain.

# WORLDWIDE

City	Temp	Wind	Cloud	Temp	Wind	Cloud
City	Temp	Wind	Cloud	City	Temp	Wind
Algeria	16	10	C	Lisbon	14	5
Amsterdam	6	21	C	London	4	2
Antwerp	11	10	C	Madrid	13	8
Bath	11	10	C	Manchester	13	8
Birmingham	11	10	C	Paris	13	8
Boston	11	10	C	Porto	13	8
Brisbane	11	10	C	Rome	13	8
Buenos Aires	11	10	C	Seville	13	8
Calcutta	11	10	C	Stockholm	13	8
Cairo	11	10	C	Toronto	13	8
Canton	11	10	C	Washington	13	8
Chongqing	11	10	C	Wellington	13	8
Copenhagen	11	10	C	Yokohama	13	8
Dublin	11	10	C			
Edinburgh	11	10	C			
Hankow	11	10	C			
Hong Kong	11	10	C			
Kobe	11	10	C			
London	11	10	C			
Lyons	11	10	C			
Manila	11	10	C			
Medan	11	10	C			
Osaka	11	10	C			
Perth	11	10	C			
Rangoon	11	10	C			
San Francisco	11	10	C			
Singapore	11	10	C			
Sourabaya	11	10	C			
Taipei	11	10	C			
Tokyo	11	10	C			
Yokohama	11	10	C			



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